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EM PROGRESS

RECLAIMING THE PAST TO SECURE THE FUTURE

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

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WIPP Fills Its First Disposal Panel

In March, the Waste Isolation Pilot Plant (WIPP) completed a major step in the Department of Energy's (DOE) mission to dispose of the nation's transuranic (TRU) waste with final waste emplacement into the first of eight disposal panels of the repository. A Panel consists of a group of seven rooms designed for the permanent underground disposal of transuranic waste.

Once Panel 1 was filled, the facility immediately began disposal operations into Panel 2 with no down time resulting from the transition. WIPP crews are actively mining the repository's Panel 3 disposal area so it will be completed by the time Panel 2 is full, which is expected in late 2004. This schedule minimizes the maintenance the panels require prior to being used.

WIPP is located in southeastern New Mexico and administered by the Carlsbad Field Office (CBFO). Over its lifetime the project is expected to receive about 37,000 TRU shipments of waste from DOE sites across the nation. WIPP began accepting waste in March 1999.

Two TRU waste characterization trailers await drums in this staging area at the Savannah River Site.

For more information, contact Dennis Hurtt at (505) 234-7327.

Rocky Flats Cleanup Exceeds 50% Completion

Thanks to innovation and hard work in 2002, cleanup of the Rocky Flats site is more than 50% complete.

"The landscape of Rocky Flats is changing every day," said Rocky Flats Manager Gene Schmitt. "More fences, structures and buildings are coming down, waste is being packaged and shipped at unprecedented rates, and more environmental remediation is being completed than ever thought possible just a few years ago." Schmitt added that the progress achieved during 2002 moves the site ever closer to the goal of transitioning to the Rocky Flats National Wildlife Refuge.

"We are running under the total projected cost and are ahead of schedule," said Kaiser-Hill President and CEO Alan Parker. "Completion of our many milestones last year is a great tribute to the ingenuity and determination of the entire Rocky Flats workforce." Parker stressed that innovative strategies and safe work practices continue to be paramount to the overall success of the closure project. Kaiser-Hill, the prime contractor in charge of cleanup and closure, saved more than $100 million in 2002 while staying ahead of milestones.

The key accomplishments for 2002 includes the following:

- Workers packaged plutonium metals and oxides into more than 1,200 of 1,950 long-term storage containers. Shipments are on schedule to the Savannah River Site in South Carolina, a critical milestone toward site closure.
- Rocky Flats continued to ship more transuranic waste to the Waste Isolation Pilot Plant (WIPP) than ever before, disposing of 3,486 cubic

Rocky Flats Cleanup, continued on page 4

In This Issue...

New Legacy Office 3
SRS Canyon Cleaning.....4
Fernald Aquifer Cleanup 5
Nevada Cleans Up 6
INEEL's Technology 7
Hanford Reactor Cocooning 10
LANL Cleanup Milestones.....16

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Accelerated Process Lines Project: A WIPP Success Story

The Accelerated Process Lines Project (APL) is an important part of the Waste Isolation Pilot Plant's (WIPP) mission and one of the Carlsbad Field Office's (CBFO) greatest success stories. The project has successfully increased the number of shipments of transuranic (TRU) waste from Department of Energy (DOE) waste generator facilities to WIPP. APL mobile units are designed for deployment at DOE TRU waste generator sites to characterize, certify and ship waste to WIPP. The units include waste characterization systems and TRUPACT-II (TRU waste shipping containers) mobile loading units.

Since the project was conceived by Dr. Inés Triay, the CBFO Manager, APL systems have begun operating at the Savannah River Site (SRS), the Nevada Test Site (NTS) and Argonne National Laboratories-East (ANL-E). Approval of the process and authorization to ship has been obtained at SRS and NTS and is pending for ANL-E.

The process begins with APL personnel determining the properties of the waste stream based on historical documentation of the processes that generated the waste. This is called "Acceptable Knowledge" and is the basis for waste characterization. They then use the processes of real-time radiography (an x-ray of the contents), non-destructive assay (radiological properties) and headspace gas analysis (hazardous gases in the airspace of the drum) to confirm what was learned from the Acceptable Knowledge process. Data generated at each level of analysis is reviewed for containers and batches of containers according to a strict quality assurance program that certifies individual containers for disposal at WIPP.

The APL mobile characterization systems use a central project office and mobile TRUPACT-II loading teams to provide the infrastructure for multiple programs and to make the entire process more efficient with multiple DOE sites. By doing this, the APL has increased SRS's waste shipments to WIPP from a baseline of one shipment per month to the current level of 16 shipments per month. As of April 28, 2003, the APL program had completed 100 shipments, containing over 2500 drums, to WIPP.

The program is expediting the cleanup of two generator facilities: the Mound facility in Ohio and SRS in South Carolina. Mound is authorized by the state of South Carolina to ship waste to SRS under the condition that for every drum of waste Mound ships to SRS, SRS must ship two drums to WIPP. The APL will complete all the shipping commitments from SRS to WIPP by May 31, 2003. This will allow Mound to complete the final TRU waste shipment in June 2003.

The APL team looks to duplicate this project's success at other generator facilities while working to further increase the SRS shipment rate to WIPP. The APL project continues to exemplify DOE's commitment to environmental restoration and accelerating cleanup.

For more information, contact Dennis Hurtt at (505) 234-7327.

Six Pack Demolition at Savannah River

The Savannah River Site (SRS) has recently taken on the challenge of decommissioning more than 150,000 square feet of contaminated facilities in less than 18 months. This project, known as the "Six Pack," consists of six buildings in the M Area. It is the largest decommissioning project ever undertaken at SRS and is managed by BWXT Savannah River Company, part of the Westinghouse Savannah River Company.

One building has been demolished, a second is in progress and a contract has been awarded to demolish a third. Three others are scheduled to come down by April 2004.

Part of the challenge is to dispose of more than six million pounds of depleted uranium, which is stored in three buildings in the M Area. The material is being transported to Envirocare in Utah, an effort expected to conclude later this spring.

After the Six Pack decommissioning is complete, the rest of M Area will be demolished.

The Six Pack project is part of many "skyline" changes taking place at Savannah River to reduce the footprint of past activities and complete cleanup of SRS.

For more information, contact Fran Poda at (803) 208-3925.

DWPF Melter Operations Begin Anew at SRS

The Savannah River Site's Defense Waste Processing Facility (DWPF) recently began full-scale operation of its second melter, pouring radioactive glass on March 29, 2003. The first canister of vitrified waste was completed March 30, 2003. The melter converts the Site's high-level waste into a solid glass form (vitrified) suitable for long-term storage and disposal.

The $20 million, 65-ton new melter, which is the heart of DWPF operations, was installed in January 2003 during a six-month scheduled outage, and underwent startup tests and a gradual heat-up until operations began in late March. All operations were conducted remotely to protect workers from radiation.

DWPF's first melter operated continuously for more than eight years, including six years of radioactive operations – more than three times its design life. It produced more than 1,300 waste glass canisters—more than one quarter of the waste projected to be vitrified at SRS.

By safely extending the original melter's useful life, SRS has saved millions in taxpayer dollars and stays on course to empty its high level waste tanks. The site operated the first melter as long as possible, giving engineers a chance to observe how it faltered in its later life and to learn what to look for in future melter operation.

"The successful completion of the first-ever melter replacement is a remarkable achievement, reflecting excellent work planning and execution," said Bill Spader, DOE-SR Deputy Assistant Manager for High Level Waste.

To save time and money during future outages, the site replaced the facility's 1980s vintage control room equipment with a more modern Distributed Control System. Other obsolete equipment was also replaced during this outage, making the facility more viable for long-term operations.

For more information, contact Fran Poda at (803) 208-3925.

After eight years of continuous service (more than three times its design life), the old melter is passed by the new one.

DOE Creates Office of Legacy Management

Beginning October 1, 2003, the Department of Energy (DOE) will have a new office that will oversee sites that have been closed and no longer support DOE's ongoing national security, energy and science missions. The new Office of Legacy Management (LM) will be a stand-alone program secretarial office that will report directly to the Under Secretary of Energy.

"The establishment of the Office of Legacy Management demonstrates DOE's continued commitment to manage sites where active remediation has been completed," Secretary of Energy Spencer Abraham said. "The establishment of this new office is a significant step to ensuring the long-term protection of human health and the environment."

The office's primary functions will include: management of the land and associated resources, surveillance and maintenance associated with environmental remedies, records and information management, and the management of post-closure liabilities. The sites transferring to LM's authority will include: Environmental Management (EM) closure sites (Pinellas Plant, Weldon Spring Site), Uranium Mill Tailings Radiation Control Act sites, and Formerly Utilized Sites Remedial Action Program sites where remediation is complete. As more sites are successfully remediated and closed by EM, site surveillance and maintenance functions, and worker benefits as appropriate, will be transferred to the new office for long-term management.

Further details and the complete proposed legacy management budget are available at http://www.cfo.doe.gov/budget/04budget/content/otherdef/lm.pdf.

Canyon Makes History In South Carolina

Canyons in South Carolina? There are two at the Savannah River Site (SRS). And one recently made SRS history.

Chemical separations facilities are called "canyons" because of their long, narrow shape. F Canyon has completed its scheduled operations and is undergoing suspension. All materials are being dispositioned from the canyon.

The last remaining highly radioactive material in F Canyon was 30,000 gallons of Americium/Curium (Am/Cm). In late January, that material was successfully transferred from F Canyon, through more than two miles of pipe to H Area Tank Farm.

The transfer was significant because it was the first time such a large amount of material was transferred from the canyon at one time. In the past, the system and the controls in place allowed for only small amount of material to be transferred at once. After two years of work to change those constraints, and an enormous amount of teamwork, the transfer took place seamlessly, more than two months ahead of schedule. Cold runs were conducted late last year to ensure all facility modifications and other changes were working as designed.

The material is now in H Area Tank Farm's tank 51, where it will be part of the next large sludge batch to be vitrified in the Defense Waste Processing Facility. The successful transfer is a major step for F Canyon's suspension efforts, says Westinghouse Savannah River Company's Acting Chief Closure Officer Bill Johnson. "Transferring the Am/Cm material is a significant milestone that will help ensure successful suspension of the canyon, and is a major step forward in our goal of accelerated closure and risk reduction."

For more information, contact Fran Poda at (803) 208-3925.

Rocky Flats Cleanup, continued from page 1

meters of waste in 2002. Rocky also shipped more low level waste to the Nevada Test Site than in previous years, disposing of 32,174 cubic meters of waste.

- The site has shipped 5,200 of 12,500 cubic meters of transuranic waste (42% of total to be shipped); shipped 23,000 of 61,000 cubic meters of low level mixed waste (38%); and shipped 68,000 of 207,000 cubic meters of low level waste (33%).
- Workers have demolished 232 of nearly 800 structures on site.
- Four facilities—a uranium-contaminated building, a large administration facility, a large office facility and a calibration laboratory—were razed.
- Workers remediated eight of the top 10 highest risk environmental remediation sites.
- Remediation began on the site's largest soil removal project and the Solar Evaporation Ponds remediation was completed.
- Workers in Building 771—once dubbed "the most dangerous building in America"—removed the last of 240 gloveboxes in the facility in December 2002 reaching a key milestone for Rocky Flats. To date, workers have removed more than 850 of 1,324 highly-contaminated gloveboxes across the site.
- Full-scale deactivation and decommissioning activities are under way in all four of the former major nuclear buildings.

Because of innovations and the use of new technology, the total amount of waste expected to be generated throughout the closure project has been reduced. Using different chemical decontamination agents has reduced the amount of transuranic waste by thousands of cubic meters.

Ideas and processes were deployed that cut time and cost, and improved safety. Often the innovation was the result of simply recognizing the decommissioning potential of widely used products and processes: for example, using a spray-on coating of polyurea to package and ship large waste items and using water jets to cut up tanks. Water jet cutting systems have been used for several years in the automotive, aerospace and other industries.

Adapting this technology controls contamination, generates less waste and improves worker safety. The demonstration of using polyurea plastic resulted in nearly eliminating all safety and health hazards associated with size-reducing and packaging. Cost savings estimated for using this technology on two furnaces exceeded $30,000 and $100,000 on a large, contaminated waste compactor.

In many cases, the innovations not only moved Rocky Flats closer to safe closure, but drew keen interest from other Department of Energy sites.

The project met or exceeded all regulatory milestones for 2002 ahead of schedule under the Rocky Flats Cleanup Agreement (RFCA).

For more information, contact Karen Lutz at Karen.Lutz@rf.doe.gov.

Demolition was completed in June 2002 on Building 850, a former administrative facility.

Workforce Transition Accelerates at Rocky Flats

Site managers, local unions and stakeholders met at Rocky Flats in late March 2003 to discuss site closure, workforce transition and the new Department of Energy (DOE) Office of Legacy Management, which will have oversight of Rocky Flats when the site closes in 2006.

Michael Owen, incoming director of the Office of Legacy Management, committed $800,000 to fund the new Workforce Transition Program and the enhanced Career Transition Center (CTC) at Rocky Flats.

"Our office is responsible for softening the impact of downsizing at sites such as Rocky Flats," Owen said. "These funds are intended to help each worker prepare for their next job or career. The money will directly pay for many of the resources and services being offered through the enhanced CTC such as career counseling, resume development, entrepreneurial resource program and educational training programs."

"I am glad to see DOE Headquarters, the Rocky Flats Field Office and Kaiser-Hill [Rocky's prime contractor] jointly acknowledge the tremendous service the Rocky Flats workforce is doing for the community, Colorado and the country," said United Steelworkers of America Local 8031 president Tony DeMaiori. "We served on the front line of the Cold War and are now proudly and safely cleaning up Rocky Flats. Our workforce will be a great asset to many local businesses, and we need to help each worker successfully transition to their next stage in life."

"Our guardforce is likely the first group impacted by site closure. We appreciate any assistance these funds will provide our guards as our mission at Rocky Flats is diminished once the Special Nuclear Materials are safely removed from the site," said the president of the Rocky Flats Security Officers Independent Union Local 1, Dan Chesshir. "We have provided a valuable duty to the Rocky Flats Closure Project."

To date, more than 800 Rocky Flats employees have taken advantage of the Workforce Transition Orientation that provides a broad overview of the services and resources available through the CTC.

For more information, contact Karen Lutz at Karen.Lutz@rf.doe.gov.

Rocky Flats Security "Team of the Year"

The police officer team representing the Rocky Flats Closure Project was named the Department of Energy's (DOE) "Team of the Year" at the 30th annual Security Police Officer Training Competition.

Wackenhut Services placed first out of 12 teams representing DOE nuclear facilities. The team also competed against a team from the United Kingdom Atomic Energy Act Constabulary, military teams from the U.S. Marine Corps and the U.S. Air Force, three teams from the Office of Transportation Safeguards, and two law enforcement teams.

"Our Security Police Officer team has proven itself to be the best of the best," said Marvin Brailsford, Kaiser-Hill vice president for Material Stewardship. "The

Rocky Flats Security, continued on page 7

Enhanced Monitoring Wells at Fernald Aid Aquifer Cleanup

Ground water scientists at the Department of Energy's Fernald Environmental Management Project are using multilevel monitoring wells to assist in tracking the remediation of a 170-acre uranium contamination plume in the Great Miami Aquifer, which covers approximately 960,000 acres. The aquifer underlies the Fernald site and is one of the largest sole source aquifers in the nation.

The multilevel wells have lower installation costs than standard wells and provide data from a large cross-section of the plume so scientists can more closely monitor the performance of Fernald's ground water restoration program.

Multilevel monitoring wells allow scientists to monitor up to six different depth intervals per well and spot sample the bottoms of the wells. For large contamination plumes like Fernald's, which measures 40 to 50 feet deep in places, multilevel wells provide data from across the entire plume. With this additional

A cross section of a multilevel well shows how Fernald scientists take multiple samples at different depth intervals. Scientists are using the additional data to track the restoration of the underlying aquifer.

Enhanced Monitoring Wells, continued on page 13

Industrial Sites Project Saves Time and Money... and Reduces Risk

Thanks to teamwork and innovative approaches to getting the job done, the Industrial Sites Project at the Department of Energy's (DOE) Nevada Test Site (NTS) has seen remarkable progress in past months. In the past fiscal year alone, all project milestones were met, and 19 assessments, four remediations and eight site characterizations were completed. Here are just a few examples of industrial sites achievements in Nevada:

Better, Cheaper, Faster...

The Industrial Sites Project is a big customer of new, innovative technologies. Recently, the project team employed the In-situ Object Counting System (ISOC) as part of the closure activities at the Reactor Maintenance, Assembly, and Disassembly facility. Typically, removing radioactive material from inside a building would have required the team to first collect the material and then package it for shipment to a laboratory for further analysis and characterization. However, by using the ISOC system, collected samples could be analyzed and characterized at the site, which provided real-time data and saved approximately 450 man-hours in labor costs.

At another corrective action site, a technique known as X-Ray Fluorescence (XRF) helped reduce the volume of hazardous waste by 95%. Similar to an ultraviolet lamp, the XRF can make objects glow (fluoresce) and project different colors. The specific color emitted determines what elements are present and the intensity indicates just how much of an element is present. One of the contaminants of concern at this site was lead. Using the XRF unit on samples, scientists were able to obtain information pertaining to the amount of lead within 30 seconds. Using this technique, it was determined that only two of the 40 cubic yards of waste material needed to be disposed of as hazardous waste.

The Industrial Sites Project conducts investigations and corrective actions at sites that have been potentially impacted as a result of past nuclear testing and support activities at the Nevada Test Site (NTS) and the Tonopah Test Range (TTR). The contaminants of concern at sites located at the NTS and TTR include various organic and inorganic compounds, metals, unexploded ordnance, and various radionuclides.

Positive Partnership with U.S. Air Force Saves DOE Time and Money...

The Industrial Sites Project was tasked with removing debris from a disposal area at the Tonopah Test Range (TTR), located northwest of the Nevada Test Site on the Nevada Test and Training Range (formerly the Nellis Air Force Range). A total of 2,780 cubic yards of debris was excavated from the area, and through a cooperative effort between the DOE's Nevada Site Office and the U.S. Air Force, the debris was disposed in the U.S. Air Force's landfill at the TTR. This debris would normally have been hauled off the test range and transported back to the NTS, more than three hours away. This effort shortened the project schedule by 62 days and saved nearly $580,000.

"The Air Force views this land (TTR) as a national treasure, with a lot of testing and training taking place here," said Lt. Col. Richard Scarine. "This all entails cooperation between the DOE and the Department of Defense, and I definitely think that's happening."

Preliminary Assessment Finds More Than 250 Mud Pits...

The Preliminary Assessments (PA) team, a group within the Industrial Sites Project, is charged with investigating sites before any field work begins. Historical data are carefully analyzed and interpreted to determine the potential for residual contamination.

All 828 underground nuclear tests that were conducted at the Nevada Test Site used drilling methods that required drilling lubricants (mud), which were contained in excavated areas near the tests known as mud pits. Over time, some of the mud pits blended in with the surrounding environment. To locate these mud pits and assess any potential release of contaminants, the PA group reviewed more than 10,000 photographs of mudpits associated with almost 3,700 drill holes. Recently, the team completed the mammoth task of identifying 257 mud pits, verifying current conditions at every mud pit site, and then preparing an inventory report detailing their findings. The completion of the PA team's reports laid the groundwork for the Industrial Sites Project to continue its efforts to group the mud pits by similarities and to develop a strategy for characterization.

For more information, visit the Nevada Site Office's Environmental Management Web site at: http://www.nv.doe.gov/programs/envmgmt/default.htm.

INEEL's Alternative Technology

How do you treat one million gallons of liquid radioactive waste in the safest and most efficient manner possible? Over the next several months, the Department of Energy (DOE) will work closely with the Idaho National Engineering and Environmental Laboratory (INEEL), the State of Idaho, stakeholders and the general public to select a technology to treat sodium-bearing waste stored at the Idaho Nuclear Technology and Engineering Center's tank farm.

Over the past 50 years, the tank farm has safely stored liquid high-level waste (generated from spent nuclear fuel reprocessing efforts) and sodium-bearing waste (resulting from cleaning contaminated facilities and equipment). To date, all of the liquid high-level waste has been removed from the tank farm and solidified through calcining campaigns. Removing the sodium-bearing waste from above the Snake River Plain Aquifer and converting it into a stable and solid form remains one of the DOE's highest priorities.

An aerial view of the tank farm, which includes eleven 300,000-gallon underground stainless steel tanks.

"During 2003, we will be working closely with the DOE and its stakeholders to identify a technology alternative to treat the sodium-bearing waste that is currently stored in the tank farm," said Gary Milnarich, project manager for sodium-bearing waste treatment for the Idaho Completion Project. "Additionally, DOE is seeking public input and has scheduled several workshops throughout the year to provide citizens with a forum to learn more about the technology options and to provide comments about the selection process. The information gained from stakeholders will then be considered by DOE as they make the final technology selection."

The DOE has narrowed its selection to four alternatives: calcination with a Maximum Achievable Control Technology (MACT) upgrade, steam reforming, direct evaporation and cesium ion exchange. Each of the treatment technologies has its own advantages for processing the waste as efficiently and economically as possible so that it can eventually be removed from Idaho. A definition and brief summary of each technology option currently under consideration is provided below.

Calcination with MACT Upgrade
A process to convert sodium-bearing waste into granular solid form uses a drying process. Air is used to mix, or fluidize, the waste and additives. Combustion of kerosene creates the heat to dry the waste and additives to form calcine. This is a high-temperature (600 degrees Celsius) thermal process.

Steam Reforming
A similar process to calcination, steam reforming uses a fluidized bed drying process to produce a granular solid. Steam reacts with the waste and additives to dry the mixture. The heat source is electric heaters, thus eliminating the need for an external fuel source. This is a high-temperature (600 to 750 degrees Celsius) thermal process.

Direct Evaporation
The volume and mass of the liquid sodium-bearing waste is reduced through evaporation. The waste is then solidified by cooling the supersaturated solution. This is a low-temperature (90 to 120 degrees Celsius) thermal process.

Cesium Ion Exchange
Solids are filtered out of the sodium-bearing waste and cesium is removed through a process called "ion exchange." The remaining liquid waste can then be mixed with chemicals, a process called "grouting," or absorbed onto a silica-based material for disposal. This is a non-thermal process that operates at room temperature.

The DOE's strategy in selecting a treatment alternative is to seek public input and complete conceptual designs for each of the technology options. The public comments and conceptual design reports will then be analyzed and considered before a final technology selection is made.

"Public involvement will play a critical role in making the final decision to select a treatment technology for the liquid sodium-bearing waste," said Milnarich. "Our goal is to involve the public as early as possible in the decision-making process to provide adequate time to discuss issues. We anticipate a large response from citizens throughout the state."

For more information, contact Bruce Byram at byrabj@inel.gov or (208) 526-3127.

Rocky Flats Security, continued from page 5

Rocky Flats protective force is made up of highly trained and skilled professionals and this team is an accurate representation of our entire protective force."

The training competition consists of an individual and a team competition, which includes five events testing the competitors' skills in combat shooting, physical fitness, and tactical obstacle courses. Team events test a team's ability to respond to a situation effectively and efficiently, with cohesiveness, decisiveness and physical endurance playing a major role.

For more information, contact Karen Lutz at Karen.Lutz@rf.doe.gov.

Idaho-Ohio Team Gets "Real-Time" Results

The Idaho National Engineering and Environmental Laboratory (INEEL) and the Fernald Environmental Management Project have developed a system to rapidly scan, characterize and analyze surface soil contamination on location, which has already saved millions of dollars by eliminating hand collected samples.

The system consists of a sodium iodide spectrometer and global positioning system (GPS) hardware, which can be mounted and used on four different platforms. These platforms consist of an all-wheel drive utility vehicle, hand-pushed units and an excavation-mounted system. Additional applications can include backpack systems and others.

The mobile spectrometer concept was initially developed and used by Fernald engineers to prescreen and analyze soils contaminated with uranium, thorium and radium. This analytical system generated an estimate of field coverage and activity levels after several days of data processing and analysis.

To streamline the data acquisition and analysis process, INEEL integrated engineering and computer hardware and software to provide real-time activity and coverage maps to technicians performing work in the field. Online analyses have been added to automatically examine and correct collected spectra for energy calibration drifts, and strip spectra in regions of interest to provide moisture-corrected activity levels for total uranium, thorium-232 and radium-226. The software also provides checks and alarms to alert operators when hand examination of spectral data may be necessary.

Fernald managers estimate that use of this technology has already saved more than $16 million, and may save up to $34 million through fiscal year 2006.

INEEL has applied this real-time concept to develop an in situ platform—the Actinide X-Ray Scanning System (AXISS)—to detect concentrations of Plutonium-238 in contaminated soils. The heart of this system is a large area proportional counter that collects spectra in the x-ray energy region. A prototype of this system was successfully demonstrated in October 2002 at the Mound Closure Project in Ohio. Final testing of the AXISS will performed in May 2003.

For more information, contact Doug Maynor at (937) 865-3986.

Columbia River Shoreline Gets Cleaner

In early 2003, Hanford's Spent Nuclear Fuel (SNF) Project passed a critical juncture when it finished moving more than two million pounds (more than 1000 metric tons) of highly radioactive spent nuclear fuel out of the K Basins along the Columbia River. The achievement represents about 26 million curies of radioactivity moved away from the river shoreline. Moving all this fuel is one of the most significant risk reduction activities at the Hanford site in the last 60 years.

"Our critics said we'd be months or even years behind schedule, but we knew we had to stay the course and let our performance prove them wrong," said Department of Energy (DOE) Richland Operations Office Manager Keith Klein. "Getting to this point has taken dedication, innovation, and coordination of numerous individuals at all levels of the contractor and Federal work forces."

To accomplish this feat, the SNF employees started up the fuel transfer system to move the K East Basin's more degraded fuel to the K West Basin. On November 25, 2002, the system delivered its first load—ten canisters—of irradiated uranium fuel to the annex building adjacent to the K West Basin, where it will be stored in a long-term, dry, underground vault away from the river.

This milestone brings the SNF Project to about its halfway point of removing all the spent fuel from both basins. The remaining spent nuclear fuel will be removed by May 31, 2004.

For more information, contact Andrea Powell at (509) 376-0626 or Andrea_S_Powell@rl.gov.

An operator at the Fuel Transfer System console works in the Fuel Transfer annex. Shown at right is the straddle carrier on the rails that run from the basin to the annex.

Fernald Rail Operation on Track for 2004 Completion

Fernald's train crew assembles 61 gondola railcars to make the 75th unit train to leave the site loaded with waste pit material. On average, each unit train carries 6,000 tons of waste.

The most extensive rail operation in the Department of Energy (DOE) complex is enabling the Fernald site in Ohio to accelerate remediation and disposition of a 37-acre waste pit area that once contained over one million tons of low-level radioactive waste. Fernald is fewer than two years from completing the remediation.

In March 2003, Fernald workers shipped the 79th train of material to Envirocare, a licensed commercial disposal facility near Clive, Utah, as part of DOE's long-term cleanup plan for the Waste Pits Project, one of five remediation projects at the site.

The waste pit area contains six waste pits (which range in size from one to five acres and vary in depth from 10 to 40 feet), a burn pit and clear well. During past uranium production operations, Fernald disposed of solid and liquid processing material and refining residues in the waste pits and incinerated materials, such as laboratory chemicals and refining residues, in the burn pit. The clear-well served as a settling basin for processing water.

Prior to initiating full-scale remediation of the waste pits, Fernald constructed an 11-track rail yard and procured 170 gondola railcars and three locomotives. Since the first train left the site in April 1999, Fernald has maintained a steady shipping cycle of one train every two to three weeks. As the waste is excavated, cleanup workers haul it by truck to onsite remediation facilities where they process and treat the waste to remove excess moisture, load it into double-lined railcars with secure lids, and assemble the cars into a unit train for shipment to Envirocare. Over a five-year shipping period, Fernald estimates it will transport 124 trains of waste to Envirocare. Each train consists of about 60 railcars and carries approximately 6,000 tons of waste.

As it nears its fourth year of operation, Fernald has shipped more than 500,000 tons, an equivalent of 25,003 truckloads, of an estimated 790,000 tons of processed waste to Envirocare and is on schedule to complete waste processing operations by the end of 2004.

"By excavating the waste pits, we are eliminating yet another source of ground water contamination to the underlying aquifer," said Dave Lojek, DOE Waste Pits project manager. "Every train that leaves our gates and arrives safely at the disposal facility brings us one step closer to completing this project."

For more information on the Waste Pits Project, contact Dave Lojek at (513) 648-3127 or dave.lojek@fernald.gov.

Fernald's New Technology Reduces Radon

After rigorous operability testing, the Department of Energy's (DOE) Fernald site tested a new radon control system in December 2002 that reduced the concentration of radon gas in two concrete waste storage silos by 95 percent. This is the first step in the removal of the silos' waste which is scheduled to be completed in May 2006.

Known as the K-65 Silos, the aging structures were constructed in the 1950s and contain 8,900 cubic yards of low-level, radium-bearing waste. "The new system reduces radiation exposure levels so workers can safely remove the waste from the silos in preparation for treatment and disposal," said DOE Silos Project Manager Nina Akgunduz.

The Radon Control System (RCS) stands about 40 yards from the earthen-bermed silos. Fans within the RCS draw the radon-bearing air into the facility via a series of valves and piping connected to manways (like manholes) on top of the silos. The radon gas is removed by passing the air through filters containing activated carbon. Once the air has traveled through the carbon beds it passes through HEPA filters to remove any remaining particulate from the radon decay chain.

The next step in remediating Fernald's silos will begin in June 2003 when Fernald cleanup crews will initiate installation of waste retrieval equipment around the silos. Using water jets and slurry pumps, the crew will remove the clay-like waste from the silos and transfer it to four 750,000-gallon temporary storage tanks. Treatment plant operators will then blend the waste with cement to produce loose concrete suitable for safe packaging and offsite transportation.

For more information, contact Nina Akgunduz at (513) 648-3110 or nina.akgunduz@fernald.gov.

Cocooning Complete at DR Reactor

"If people want to see visible cleanup progress at Hanford, the first place they should go is to one of the old reactor sites," said Rep. Doc Hastings (R-Wash.) at a November 2002 ceremony marking completion of cocooning of DR Reactor. It is the second of Hanford's nine plutonium reactors to be cocooned and was completed nearly a year ahead of schedule.

There are four parts to decommissioning and dismantling a reactor: engineering, pre-demolition, demolition, and the safe secure enclosure (cocooning) phases.

Cocooing is the common way of referring to the Interim Safe Storage (ISS) project. Cocooning is conceived to give the highly radioactive reactor cores time to decay to relatively manageable levels.

It is the process of placing Hanford's old reactors in interim storage for up to 75 years. It involves removing all reactor buildings and support structures except for the five-foot-thick concrete shield walls surrounding the reactor core. This is known as cocooning because all doors and other openings in the remaining structure are sealed and a new roof is added to the structure, sealing it off from the world.

DR Reactor was a Cold War-era facility operated 1950-64. "We've been dismantling and cocooning DR Reactor since July 1998," said Mike Mihalic, project manager for Bechtel Hanford Inc, Hanford's Environmental Restoration Contractor. "With C Reactor completed in 1998, DR in September and three additional reactors underway, we've developed quite an efficient team. They know what they're doing and they do it safely. We're very proud of what our team has accomplished."

Placing a 75-year roof over the remaining portions of the DR Reactor building is the last step in the cocooning process.

"We've learned a great deal since we began work on C Reactor in 1995," Mihalic added. "It cost about $27 million to cocoon C Reactor." But the DR Reactor cocooning costs were only approximately $17 million. "Because of the efficiencies we've developed, we've been able to reduce the costs to the point that we can cocoon four for the price of three," Mihalic declared.

Sometime in the next 75 years, the Department of Energy (DOE) and the regulators will decide when to implement the disposal part of the effort. The current plan is to transport the graphite reactor cores to Hanford's central plateau on giant crawlers, similar to those used to transport the space shuttle to the launch pad. The cores, 40-foot cubes that weigh between 11,000 and 16,000 tons, would be buried in a common trench under an engineered barrier.

According to the Tri-Party Agreement between DOE, the Environmental Protection Agency and the State of Washington, the surplus reactors originally were not scheduled to be cocooned for several more years. As part of DOE's effort to reduce risk and accelerate cleanup, the milestones were renegotiated in 2002. Even with the renegotiated milestones, all work on DR was completed well ahead of the September 2003 milestone and cocooning of the other reactors will be accelerated as well.

"Hanford has made significant progress cleaning up the old reactors and associated cooling water effluent sites," said Bechtel Hanford President Mike Hughes. "That work represents significant progress toward DOE's goal of accelerated cleanup of the Columbia River corridor."

Hughes added that he is most pleased with the team's safety record. Nobody has lost a day of work to injury since the ISS project started seven years ago. "This is heavy duty demolition work where the risk of accident can be high without the proper focus on safety," he said.

When complete, one or more doors will be left intact, but welded shut. Sensors will be used to remotely monitor temperature and moisture in the building. Once every five years, surveillance and maintenance staff will unseal the door and enter the facility to conduct a visual inspection.

For more information, contact Andrea Powell at (509) 376-0626 or Andrea_S_Powell@rl.gov.

New Fernald Stewardship Web Site

The Fernald Closure Project has launched a new Web site describing the site's plans for post-closure surveillance and maintenance of the On-Site Disposal Facility and restored areas of the Fernald site.

Since the late 1990s, the Department of Energy (DOE) and Fluor Fernald have been working with stakeholders to prepare for the site's transition to long-term stewardship after site remediation is complete in late 2006. The Web site, http://www.fernald.gov/Future/Future.htm, includes Fernald's Comprehensive Stewardship Plan and information about records management requirements, funding, and the Department's stewardship policies and guidance documents. Information is also available on Fernald's final land use/public use plans and cleanup progress.

For more information, contact Gary Stegner at (513) 648-3153 or gary.stegner@fernald.gov.

New Technology Helps Prioritize Hanford Cleanup

Cleanup of the more than 700 waste sites at the Hanford site in Washington will be addressed by a comprehensive new tool that will predict the movement and fate of contaminants through ground water, the vadose zone (the soil above the ground water) and the Columbia River. The System Assessment Capability (SAC) is an integrated system of computer models and databases that also assesses the impact of contaminants on human health and the environment.

Instead of showing each waste site in isolation as has been done in the past, SAC shows each waste site in context. "It looks at all the waste sites at Hanford in relation to each other and how they contribute to future impact," said Bob Bryce, SAC project manager for Pacific Northwest National Laboratory, which developed the tool for Hanford. "Using SAC, we can see which waste sites are making the greatest impact and clean them up first."

Two sets of computer models are at the heart of SAC. The first set—the environmental model—simulates how contaminants move through the environment. The second set estimates risk and impact from those contaminants.

The environmental model is based on a comprehensive inventory of potential contaminants from Hanford operations as far back as 1944. With information about the quantity and concentration of contaminants at a site, SAC determines how the contaminant will behave, how the contaminant will discharge to the soil and move to the ground water, and how it will discharge into the ground water and enter the Columbia River.

The second computer model set estimates risk and impact based on a contaminant's persistence in the environment, its mobility, chemical form and toxicity and where it appears in the accessible environment.

"A lot of mobility is determined by the nature of the contaminant and the soil," Bryce added. "Some contaminants, such as plutonium, may bind up chemically in the soil and not be a significant risk through the ground water pathway. Other contaminants, such as technetium, are mobile and have long half-lives."

Various scenarios are developed and modeled to evaluate alternative cleanup strategies. These scenarios are based on the chemical inventory, geology, chemistry and the hydrology of the site. The consequences of these scenarios on the environment and the impact of various cleanup options are predicted.

Scientists have tested the validity of SAC by comparing results to known plume migrations at the Hanford Site over time. The model currently provides a useful, but not perfect representation of historical plume migrations. Refinements are underway and researchers are preparing to conduct a composite analysis of the future impacts of waste left at Hanford. The results of this study will be considered as future waste disposal decisions are made at the site. SAC is an integral part of the Department of Energy's Ground Water Protection Project at Hanford.

For more information, contact Kathryn Lang at Kathryn.Lang@pnl.gov.

Protecting the Columbia River Corridor is a major focus of Hanford Site cleanup activities.

Demolition of Accelerator Facility Hastens Cleanup

For the Oak Ridge Environmental Management Program, simply learning how to spell "EN Tandem Van de Graaff Accelerator" facility was the first of many difficult challenges in this successful disassembly and removal project. The Oak Ridge National Laboratory (ORNL) used the accelerator for nuclear physics research from the early 1960s until it was decommissioned in the late 1990s.

More than 325,000 pounds of equipment were disassembled, loaded, and shipped from the building in just over two months with no injuries. The success of the project was largely due to the innovation and active input of the labor force. ORNL arranged to send many of the retired accelerator components to a lab at the University of Mexico, which operates a similar system.

The 40-foot-long accelerator vessel, weighing 90,000 pounds, is being moved out of a building at Oak Ridge National Laboratory.

For more information, contact Sherry Moon at (865) 576-0109.

4 Million Ton Milestone at Hanford

In January 2003, the four-millionth ton of contaminated waste – enough to fill the Empire State Building 1.5 times – was placed in Hanford's Environmental Restoration Disposal Facility (ERDF), the result of nearly six years of continuous operation.

"ERDF is key to cleaning up the Hanford Site in a safe, cost-effective manner and to protecting the Columbia River," said Owen Robertson, who oversees ERDF work for the Department of Energy's (DOE) Richland Operations Office. "Four million tons of contaminated waste have now been safely and efficiently disposed, protecting people and the environment."

The massive disposal facility for Hanford's low-level and hazardous waste is located in the center of the 586-square-mile Hanford Site. Each day, workers at ERDF typically empty an average of 145 containers filled with low-level and hazardous waste, rock, soil and other debris, mostly from former production reactor sites along the Columbia River.

"In addition, demolition and cocooning debris from Hanford's old production reactors and wastes from other Hanford facilities are filling the facility," said Jeff James, ERDF site supervisor for Bechtel Hanford, the contractor that manages the project.

Once the waste is collected, it is placed into "cans" that hold up to 20 tons. Drivers haul the cans from the dig sites to nearby staging areas. From there, other drivers haul the cans over Hanford Site roads to the ERDF container transfer area.

The cans are then taken into the disposal facility, unloaded and emptied, and delivered back to the ERDF container transfer area. The cans then go back to the dig sites, or wherever they are needed, and the process begins again.

ERDF itself comprises four enormous areas, or "cells." Each cell is constructed with a bottom liner consisting of double layers of impermeable materials, such as flexible plastic membranes and clay admix and a system above the impermeable layer to catch liquids as they drain from waste materials.

With an estimated 10 million tons of waste along the Columbia River corridor, DOE and the Environmental Protection Agency have proposed adding four more cells to ERDF, doubling its capacity. Design for cells five and six were completed in March 2003, with construction to begin in late 2003. The cells are expected to be ready to receive waste by 2005.

"We are extremely proud of the design and performance of ERDF and of the efficiency of the team," Robertson said. "And, the team's dedication to safety – zero lost-day accidents since operations started in 1996 – while working under an aggressive schedule is an extraordinary accomplishment."

What was once a very large hole in the ground is nearing its operational capacity of 5.2 million tons. More than four million tons of contaminated soil and debris fill the four existing cells at the Environmental Restoration Disposal Facility.

For more information, contact Andrea Powell at (509) 376-0626 or Andrea_S_Powell@rl.gov.

Oak Ridge Facility "Less Hazardous"

A nuclear facility at Oak Ridge has been re-categorized as a less hazardous "Radiological Facility" thanks to the removal of a radium boron source.

Built in 1951, the Bulk Shielding Reactor was previously used for isotope production, radiation shielding measurements, material irradiation, and material experimentation. The facility houses a pool that was used for the reactor and at one time contained 73 irradiated fuel elements and three radioactive sealed sources.

The Environmental Management Program in Oak Ridge removed the final radium boron source in February, allowing the facility to receive its new categorization.

The source material was moved quickly, with workers pulling the canister out of the pool with long-handled tools and sealing it in a drum. The drum was then loaded into a separate cask.

Safety was always the key consideration on this project. Several practice sessions as well as an extensive briefing were held before the work was performed. Using already established integrated safety measures as well as abiding by "As Low As Reasonably Achievable" principles which allow 200-300 millirem dosages, the dose to workers was held significantly below estimates at a mere 11 mrem. Large-area wipes were used in the removal area to detect any contamination, and none was found.

The radium boron is currently being stored in a waste management storage facility. It may be offered to other sites that can use it in science experiments.

For more information, contact Sherry Moon at (865) 576-0109.

Delivering On Commitments

ORP Meets Challenges Head On

The Department of Energy's (DOE) Office of River Protection (ORP), through its management of the River Protection Project, is working to meet the challenge to clean up Hanford's tanks. The plans call for safely removing the waste from the tanks, treating the waste, safely storing or disposing of the treated waste, and ultimately closing the tanks. During 2002, ORP transformed its plans into accomplishments.

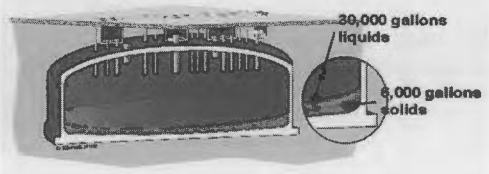
Construction started on the Waste Treatment Plant, the largest radiochemical processing facility in the world, which will vitrify Hanford's tank waste beginning in 2011. Concrete and rebar now form the visible skeletons of the Waste Treatment Plant's major processing facilities.

Construction was completed on the Hanford Cold Test Facility, an 800,000-gallon mock tank allowing for the testing of technologies in an environment that reduces the risk of worker exposure to radiological and chemical hazards.

Miles of additional waste transfer piping were installed to the waste feed delivery system that will enable tank-to-tank transfers and connect the double-shell tanks storage area with the Waste Treatment Plant.

Notable progress was made on removing liquid waste from Hanford's single-shell tanks as more than 2.5 million gallons of waste were pumped and transferred to double-shell tanks for safer storage.

ORP also worked with Bechtel National, Inc., its prime contractor for the design and construction of the Waste Treatment Plant, to optimize the melter configuration for vitrifying high-level waste and low activity waste to ensure that waste will be treated faster and more efficiently.



The first Hanford tank selected for waste retrieval and closure, single-shell Tank C-106, contains approximately 30,000 gallons of liquid waste and approximately 6,000 gallons of sludge-like waste. It is expected that retrieval operations to remove waste from the tank will begin in 2003.

In addition, in October 2002, ORP announced new and aggressive performance incentives with its prime tank farm contractor, CH2M HILL. The performance incentives aim to accelerate tank cleanup and focus on liquid tank waste removal, completion of the waste feed delivery system, tank closure, and the use of supplemental technologies to augment the capacity of the Waste Treatment Plant to treat low activity tank waste.

Although changes in plans for a project as large and complex as tank cleanup at Hanford are inevitable, the commitment of ORP to complete tank cleanup, and to do it in a manner that protects the safety of workers and the environment, will not change. Delivering on safety commitments through the practice of safe operations is the top priority for the project.

For more information, contact Erik Olds at Theodore_E_Erik_Olds@rl.gov.

Tank Cleanup at a Glance

- The cleanup of tank wastes at the Hanford Site is one of the nation's largest and most complex environmental challenges.
- Fifty-three million gallons or sixty percent of the volume of DOE nuclear waste is stored in Hanford's 177 aging underground tanks.
- Sixty-seven of these tanks are suspected to have leaked more than one million gallons of waste into the ground.
- The DOE is continuously monitoring the tanks for potential leaks in order to protect the environment from any further damage.

Enhanced Monitoring Wells, continued from page 5

knowledge, scientists can determine appropriate extraction well pump rates.

Previously, Fernald scientists used repetitive direct push sampling, a process in which technicians "push" a sample rod into the ground to a desired depth, and multiple standard monitoring wells to monitor the portions of the plume that are thicker than 15 feet. Although both are proven ground water monitoring techniques, they are less effective with larger, thicker contamination plumes. Direct push sampling can provide sampling at discrete levels in the aquifer, but it requires a significant effort and cost outlay to resample at the same location, limiting the sample frequency. Six monitoring wells would be required to provide the six depth intervals obtained from one multilevel well.

"After more than a year of testing, multilevel wells have proven to be effective tools in tracking the cleanup of the aquifer," said Rob Janke, DOE-Fernald project manager.

For more information, contact Rob Janke at (513) 648-3124, or rob.janke@fernald.gov.

D&D of Gaseous Diffusion Buildings in Oak Ridge

Oak Ridge is moving toward completion of one of the largest environmental cleanup projects in the world: decontamination and decommissioning (D&D) of three massive gaseous diffusion plant buildings. The project is part of a reindustrialization effort by the Department of Energy at the old K-25 site, now known as the East Tennessee Technology Park.

D&D within the process facilities involves more than 328 million pounds of material to be dismantled and disposed of in an environmentally responsible manner. The combined buildings measure more than 4.8 million square feet of space.

Inside the three buildings are the major components (converters, compressors and motors) that were the workhorses in the facilities' uranium enrichment process.

- In building K-33, all 632 of the 36-ton converters have been removed, as have the 611 compressors and 640 motors.
- In K-31, only 160 of the 595 converters and 200 of the 606 compressors remain to be dismantled. Removal in K-31 is 43 percent complete.
- In K-29, the disassembly of additional converters and compressors will begin in April.

With overall project removal at 73% completion, the current schedule calls for the dismantlement of 17 converters and 15 compressors a week. Officials for BNFL, Inc., the contractor handling the D&D, report that the project is on schedule for mid-2004 completion.

For more information, contact Jack Howard at (865) 576-5982.

K-33 Cell Floor – After D&D

Year-Long 60th Birthday Celebration

More than 50 1940s-era employees of the former K-25 Gaseous Diffusion Plant in Oak Ridge, TN, were recently treated to lunch and a site tour by the Department of Energy and Bechtel Jacobs Company as part of the site's year-long 60th Anniversary Celebration. Several of the retirees who were part of the Manhattan Project spoke to the group about their experiences at K-25 during the war. The K-25 site, now called the East Tennessee Technology Park, is scheduled for closure in 2008. Many of the historic buildings, including the massive (1.6 million square feet) K-25 building, the nation's first facility built to enrich uranium using gaseous diffusion, are scheduled for demolition. The luncheon and tour was the first of several 60th Anniversary events planned throughout the year.

Jessie Roberson Visits Oak Ridge

Jessie Roberson, Assistant Secretary for Environmental Management, is pictured with Gerald Boyd, Oak Ridge Operations Manager, during a recent visit to Oak Ridge, Tennessee. Roberson visited the site to meet with community leaders and discuss DOE's fiscal year 2004 budget request to Congress. She also announced that DOE will take steps to transform the site's cleanup contract with Bechtel Jacobs Company, LLC, to a closure contract. Changing the contract arrangement will accelerate cleanup work by five years, saving $1 billion and cutting nine years from the original cleanup schedule.

Things Are Heating up in Paducah

Researchers at the Paducah Gaseous Diffusion Plant in Kentucky are currently testing a ground water remediation technology that uses electrical resistance heating at greater depths, and in faster ground water flows, than ever before.

The project, called the Six-Phase Heating Treatability Study, uses seven electrodes – six positive and one negative - to generate heat 100 feet below ground. The heat generated vaporizes volatile contaminants, creates steam from moisture and dries the soil. The resulting steam and vaporized tri-chloroethylene (TCE) is then drawn by vacuum through activated carbon filters, which capture the vaporized TCE. Clean water is stripped off, and the emissions are closely monitored to assure that releases to the environment stay at safe levels.

The Paducah plant is the only operating uranium enrichment plant in the nation. The Chemical Cleaning Building is an essential part of plant operations, so any remediation approach must leave the building undisturbed. Monitoring at the plant indicates that there is a large quantity of TCE below the Chemical Cleaning Building, near the center of the facility. This area is considered the dominant source of ground water contamination, which has spread in a two-mile wide plume well beyond DOE property.

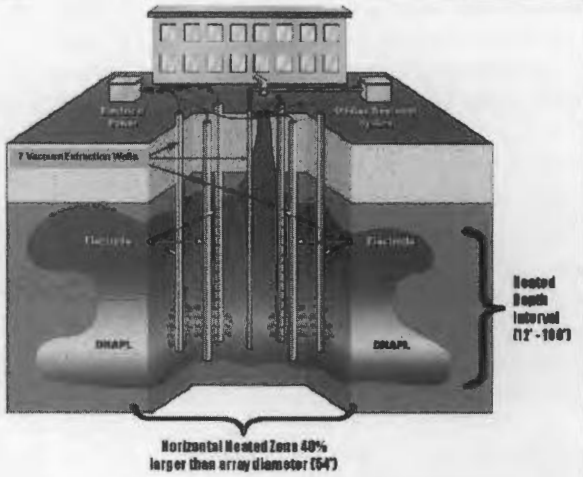
At Paducah, the source is deeper than usual. TCE is sitting like molasses on the lower levels of the Regional Ground water Aquifer, about 100 feet below the surface. Making removal even more difficult, ground water at the plant moves about a foot per day.

There may be 180,000 gallons of TCE in the main source at the Paducah plant. Concentrations in ground water at the study site exceed 100,000 micrograms per liter, vastly exceeding regulatory standards. Project managers hope the test will demonstrate that more than 90 percent of the TCE can be removed with the electrical resistance heating technology.

Electrical resistance heating has already been used successfully to remove volatile and semi-volatile organic compounds from contaminated soils with minimal surface disruption.

If tests are successful, Paducah plans to deploy several more electrical resistance heating arrays in the same area of the plant.

For more information, contact Gary Bodenstein at (270) 441-6831.



The study will test the effectiveness of electrical resistance heating for the remediation of a 100-foot deep TCE ground water contamination source at Paducah. Electrodes in a hexagonal array will heat the soil, vaporizing ground water and TCE. Vacuum wells will extract the vapors, which will be pulled through activated charcoal filters before release to the atmosphere.

Portsmouth Improves Safety Statistics

Employees at the Portsmouth Gaseous Diffusion Plant dramatically improved their safety record for fiscal year 2002 by reducing their recordable injury/illness incidence rate to 1.44 per 200,000 hours worked, down from 7.23 in 2001.

"This is the result of a concentrated effort to ensure that safety is the number one priority in everything we do," said Gil Drexel, Portsmouth Manager of Projects for Bechtel Jacobs Company. "A safe workplace is the result of the efforts of every employee, every single day," Drexel said. He pointed out a number of changes made in 2002 to make the Portsmouth site safer. "First we had to believe we could achieve zero accidents, then we implemented a plan to reach that goal."

The plan includes daily morning meetings with line-level managers and subcontractors to discuss projects and safety concerns, and a seven-member Incident Review Board (Board) that was created to evaluate events that either resulted, or had the potential of resulting, in a work-related injury. Members on the Board with the most knowledge of the conditions analyze each incident and the best way to prevent recurrence is determined.

Improving on the 2002 safety record is now the challenge for the 500 Bechtel Jacobs employees and subcontractors who make up the Portsmouth workforce.

For more information, contact Tony Takacs at (740) 897-2123.

Cleanup Milestone at LANL

Cleanup at Material Disposal Area P (MDA P) has been completed at the Los Alamos National Laboratory (LANL), a significant milestone in the pursuit to clean up the Material Disposal Areas.

MDA P is located on the south rim of Cañon de Valle on the western edge of LANL. The landfill began receiving waste from Burning Grounds in 1950, as well as debris from World War II era buildings. Operation of the landfill was suspended in 1984. Personnel began the closure process in 1997.

During cleanup, the discovery of high explosives required the use of a remote excavator to remove material from the site. Approximately 52,500 cubic yards (3,000 truck loads) of soil and debris material were excavated, one of the largest excavations by remote equipment in the Department of Energy complex. Remote excavation of the landfill began in February 1999 and was completed on May 3, 2000, just before the Cerro Grande Fire, which consumed 48,000 acres. Excavation of contaminated soil beneath the landfill using non-remote excavation methods resumed after fire recovery and was completed in March 2001. Phase II confirmatory sampling and geophysics measurements began in June 2001, at which time additional contamination was found. The contaminated material was excavated and shipped offsite. Waste removal was completed at MDA-P in February 2002.

The New Mexico Environment Department's Hazardous Waste Bureau received the "Material Disposal Area - P (MDA-P) Area Closure Certification Report" on January 31, 2003. The three-volume report includes clean closure certifications for the TA-16 MDA-P landfill, the 387 Flash Pad, and a Voluntary Corrective Action Report for Solid Waste Management Unit 16-016(c)-99. Meeting this regulatory deliverable also met the requirements of an Appendix F Performance Measure. Removing or decontaminating a site and showing that levels of hazardous contaminants do not exceed EPA-recommended exposure levels accomplishes clean closure. Baseline data from this project will be used to evaluate corrective actions at other Laboratory Material Disposal Areas.

For more information, contact Saundra Martinez at saundra@lanl.gov.

Cleanup at Material Disposal Area P is complete at the Los Alamos National Laboratory.

Permeable Barrier Captures Pollution

Researchers at Los Alamos National Laboratory (LANL) recently installed a "pollution trap" to capture chemicals and radionuclides and prevent the contaminants from migrating downstream.

Water flowing downstream of LANL now will flow through a Permeable Reactive Barrier — a huge column of pollution-capturing materials — before proceeding farther downstream. Water that encounters the barrier will be scrubbed of radionuclides such as strontium-90, americium-241, plutonium 238, 239 and 240, and uranium isotopes as well as chemicals such as perchlorate, nitrate and heavy metals.

The effluent stream from LANL's Radioactive Liquid Waste Treatment Facility flows through Mortandad Canyon. The treatment facility discharges about 60,000 gallons of treated effluent per week. Recent improvements have greatly reduced concentrations of chemicals and radionuclides in the effluent. But legacy discharges have left behind residual contamination in canyon soils and in the shallow ground water in some areas. Because some of these residues are water soluble, they can be mobilized as water flows down the canyon. The Permeable Reactive Barrier provides a simple, inexpensive technology to help control legacy contamination.

The barrier requires no personnel or energy resources to operate. It is essentially a trap dug into the ground. Within the four walls of the 27-foot-deep barrier chamber are layers of low-cost materials— fine lava rock, calcium phosphate, pecan shells, cottonseed and limestone— specifically formulated to capture contamination. Each layer treats the water for a specific set of contaminants.

Treatment materials within the barrier will last for about ten years. After their cleaning power has been exhausted, the layers can be excavated easily and sent to an appropriate disposal facility. New materials can then be added and the barrier is good for another ten years.

The chemistry behind the treatment methods is well established and technically proven. To assess the effectiveness of the barrier, LANL environmental scientists take samples of water and materials inside the treatment box. In addition, water samples are taken upstream and downstream of the barrier for analyses.

Because nothing like the barrier has ever been used on LANL property before, Los Alamos environmental researchers will carefully monitor all aspects of the technology to determine if it would be useful in other areas and at other sites across the nation.

For more information, contact James E. Rickman at (505) 665-9203 or jamesr@lanl.gov.

EM Enhances Passive Remediation

At the Savannah River Site in South Carolina, the Oak Ridge Site in Tennessee and the Hanford Site in Washington, chlorinated solvents are contaminating soils and ground water. As these are organic contaminants, the Office of Environmental Management (EM) decided to develop an "enhanced passive" natural approach to cleaning up the soil and ground water.

EM's approach is based on findings that active remediation of organic contaminants in ground water (e.g., pump and treat) are technically not as effective as previously believed, and on the premise that nature will process organic contaminants, if given enough time. So at sites with continuing missions, EM would like to let nature clean itself, but will continually monitor the contaminated plumes to ensure that they do not migrate or pose environmental risks.

As monitoring efforts have traditionally been labor intensive and costly, EM is developing approaches that are cheaper, less cumbersome, and better indicate effective risk reduction. The enhanced monitored natural attenuation project implementation plan is in place; the project is estimated to cost $6.4 million over three years. A team of scientists, cleanup managers, and regulators at Savannah River, Oak Ridge, and Hanford will conduct the project.

The Scientific Basis for Monitored Natural Attenuation and Enhanced Passive Remediation for Chlorinated Solvents project was approved by the Assistant Secretary for EM, Jessie Roberson, as part of EM's "alternative projects" approach and step-by-step improvements to current high-risk/high-cost baseline remediation projects.

The natural remediation approach to site cleanup has become increasingly popular in cleanup remedies over the past decade, in conjunction with aggressive remediation of source terms in plumes. Less aggressive cleanup of plume fringe areas have proven to be less expensive, more effective, and more environmentally acceptable.

For more information, contact Claire Sink at Claire.Sink@em.doe.gov.

Grouting Tanks in Burial Grounds

To help protect workers and the environment, the Savannah River Site (SRS) marked a cleanup milestone this spring with the final grout placement in a radioactive underground solvent tank.

"This was an enormous task," said Ed McNamee, Project Manager. "It took almost 200 average size concrete trucks to completely fill these tanks, and each grout pour required careful planning for the hazardous radiological conditions each tank presented."

Since work began in November 2001, workers have safely placed more than 1,550 cubic yards of grout in 22 tanks. Filling the tanks with grout stabilizes them and fixes remaining contaminants in place. The tanks are located in the Old Radioactive Waste Burial Ground, which has a high concentration of radionuclides that must be shielded from the environment.

A recent Record of Decision requires the burial ground and tanks to be covered

Grouting Tanks, continued on page 19

EM's Science & Technology Program Helps the Field

The Office of Environmental Management's Science and Technology program provided a technical support team to the Rocky Flats Environmental Technology Site (RFETS) to assist in improving operations while maintaining environmental health and worker safety. The technical support team developed the justification for reducing the temperature for stabilizing specific high-chloride plutonium oxides produced at the RFETS.

At the previous stabilization temperature of 950 degrees, chloride salts are vaporized, which may damage stabilization equipment and result in repair work that could increase worker exposure, generate waste and delay stabilization.

The support team reviewed existing technical data and evaluated possible alternative approaches for stabilization. They determined that a technical case could be made for lowering the stabilization temperature to 750 degrees for these specific materials. Subsequent testing showed that this stabilization condition produced material that was equivalent to stabilization at 950 degrees with respect to reactivity and moisture content while reducing furnace corrosion and formation of salt by-products. This ultimately increased worker safety and reduced financial and schedule risks.

The EM Science and Technology program is helping sites meet cleanup goals by providing teams of knowledgeable experts, reviewing baselines to identify technical risks, evaluating commercially available solutions, and in some cases, co-funding the development of innovative alternatives.

For more information contact Jeff Walker at JEFFREY.WALKER@em.doe.gov.

SSAB SPOTLIGHT

The Community Advisory Board for Nevada Test Site Programs... A Decade of Progress

Ten years ago, a group of Nevada stakeholders and the Department of Energy's (DOE) Environmental Management (EM) program began implementing new way of doing business: involving the public in cleanup decision-making. Public involvement was still a relatively new concept not only to Nevada, but also to the entire DOE complex. Approximately 120 Nevada stakeholders came forward to serve on the newly formed Citizens Advisory Board, or CAB, bringing with them a diverse set of perspectives, values and opinions relating to environmental cleanup.

Ten years later, Nevada's CAB is one of nine local Environmental Management (EM) Site-Specific Advisory Boards (SSABs) that provide advice and recommendations to the EM program at major sites across the complex.

When thinking of Nevada, most people primarily think of Las Vegas, but Nevada is a vast piece of real estate largely composed of mining, agriculture and ranching activities. Nevada's CAB currently comprises 16 men and women – 9 from Las Vegas, 1 from Reno, and the remaining 6 from small communities surrounding the Nevada Test Site (NTS). This diversity assures that a broad array of values is included in feedback to NTS program managers.

Over the years, the Board has tackled complicated issues ranging from radioactive waste transportation to long-term stewardship. Today's CAB is a seasoned, informed group focusing on three environmental management initiatives: the Underground Test Area Project (UGTA), Transportation and Waste Management, and input into the annual environmental management budget prioritization.

In addition to their ongoing focus on environmental management technical issues, CAB members also track funding issues and future budgetary impacts to the site. As a result, within the last year the CAB proactively began streamlining its efforts to get "more bang for the buck." In a state as large as Nevada, travel is a real issue for many rural CAB members. As a result, travel costs have been minimized by scheduling all committee meetings on the same day each month. Members also took a hard look at how work plans were developed and have made a concerted effort to meet semi-annually to design work plans that will support the subcommittees' ongoing work, deliverables, and feedback to the community at large. Additionally, rather than sponsoring a monthly public meeting as has been done in years past, quarterly public meetings are now conducted to coincide with deliverables and/or reporting points identified in the work plan. The outcome has been a more focused group operating at a substantially reduced cost to the taxpayer.

Carl Gertz, the Assistant Manager for EM at NTS, remarked, "I applaud the efforts of the CAB to continually seek out improved ways to work, congratulate them on their decade of volunteer service to the environmental management program, and look forward to their ongoing involvement and feedback."

The CAB has been particularly effective in impacting decisions relating to the UGTA at the Nevada Test Site. For more than 40 years, the primary mission at the Nevada Test Site was field testing of nuclear weapons. Between 1951 and 1992 a total of 828 underground nuclear tests were conducted. A primary concern of the committee is ground water contamination resulting from the historical underground testing program. Although the site developed a comprehensive modeling and investigative strategy to evaluate the extent of ground water contamination, the CAB raised questions and concerns regarding the strategy's viability for predicting potential offsite contaminant migration. As a result, the CAB requested that DOE conduct an independent peer review of the effort. After listening to the committee's concerns and rationale, project managers agreed to fund an independent peer review of the UGTA strategy. The site has since implemented several recommendations of the peer review, continues to work with the UGTA Committee, and has even taken it one step further.

"Although we think we're heading in the right direction, there is always room for improvement and opportunities for fresh perspectives," Gertz added. "Given the CAB's years of focus on this activity, I invite them to provide me their best recommendations for siting a future monitoring/characterization well at the site that will provide additional information to surrounding communities."

For ten years the CAB has been making a difference at the Nevada Test Site and now is doing it more efficiently than ever.

For more information, visit the CAB's Web site at www.ntscab.com.

LLNL Environmental Leader Named to Women's Hall of Fame

Ellen Raber of the Lawrence Livermore National Laboratory (LLNL) has been named to the Women's Hall of Fame for her contributions to the environmental field.

Raber is head of LLNL's Environmental Protection Department and a national leader in research and development efforts in pollution prevention, waste management, environmental restoration and environmental monitoring and analysis.

Raber has led the effort to accelerate the opening of LLNL's state-of-the-art Decontamination and Waste Treatment Facility that replaces an older World War II era facility. She has been a strong proponent of ensuring that LLNL operates the best environmental facilities to protect its workers and the community.

Raber has also recently led the development of a decontaminating gel that is effective against chemical and biological warfare agents but then breaks down to environmentally acceptable byproducts. The patented gel is available for use in civilian facilities in response to a terrorist incident or in the case of an accidental release of a biological or chemical agent.

In her 22 years at LLNL, Raber has used her background in geochemistry to resolve a variety of environmental issues related to geothermal resources, underground coal gasification, the strategic petroleum reserve and nuclear waste management. She has also worked on technology to provide award-winning solutions for chemical weapons treaty verification and intelligence community applications.

On March 8, 2003, she was honored during the 10th Annual Women's Hall of Fame Awards Ceremony in Oakland, California.

For more information, contact Albert Lamarre at lamarre1@llnl.gov.

Grouting Tanks, continued from page 17

with a protective synthetic cap followed by a layer of soil and vegetation to complete final closure. Capping the unit protects workers from possible exposure if more invasive processes had been used.

These tanks were used until the mid-1970s to store spent radioactive solvent and aqueous wastes generated from the plutonium/uranium extraction process. The burial ground, last used in 1974, is a 76-acre radioactive waste disposal area. The greatest volume of the waste was low-level incidental waste from laboratory and production operations. It was placed in drums, cans, cardboard boxes, plastic bags, and metal containers and buried in earthen trenches about 20 feet deep. The cap will prevent intrusion of rainwater and limit potential migration of the contaminants.

Completing the tank closures allows SRS personnel to finish plans for the final closure actions at the burial ground complex, which are scheduled to begin in December 2003.

For more information, contact Fran Poda at (803) 208-3925.

SRS Conference Involves the Community

The fourth Annual Bi-State Conference on the Savannah River Site (SRS) was held on March 15, 2003, at Savannah State University with more than 140 people in attendance. The purpose of the conference was to inform and educate the participating communities in Georgia and South Carolina about activities and new missions associated with operations and actions at the Savannah River Plant and to provide a forum for questions and answers.

The Keynote speaker for the event was Jeff Allison, Manager of the Savannah River Operations Office. He informed the community that SRS is evolving over time.

"We're trying to work toward finishing the Environmental Management mission by focusing on our most critical risks," he said. Allison expressed the importance of public participation and community involvement and added, "A key part of that public participation and community involvement activity is the effort we take to understand and support the concept of Environmental Justice at SRS. We want to ensure that our plans, programs and actions do not disproportionately affect those members of the community who may have been overlooked or left out of the decision-making processes that have guided our operations. We are committed to bringing everyone who may be interested in our operations to the table and to taking the extra steps necessary to inform and to learn."

For more information, contact Louisiana Wright at (803) 502-9982.

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EM PROGRESS

RECLAIMING THE PAST TO SECURE THE FUTURE

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 10 • Number 2 Fall 2001

Jessie Hill Roberson is Sworn in as New Assistant Secretary for EM

Secretary Abraham swears in Jessie Hill Roberson as Assistant Secretary for Environmental Management.

On July 18, 2001, the Department of Energy announced that Jessie Hill Roberson was sworn in as Assistant Secretary of Energy for Environmental Management.

Jessie Hill Roberson has more than 18 years experience in the nuclear field including extensive experience with low-level waste management, environmental cleanup and restoration, safety and security, nuclear reactor operations and project management. For more than ten years, she has held a variety of technical and managerial positions with DOE, working at the Savannah River Site in Georgia and the Rocky Flats Environmental Technology Site in Colorado. She served as manager of the Rocky Flats Field Office from 1996 to 1999. In 1996 she was named National Black Engineer of the Year for Professional Achievement in Government. Ms. Roberson is a member of the Defense Nuclear Facilities Safety Board and has also held positions with Georgia Power Company and DuPont. Originally from Evergreen, Alabama, Assistant Secretary Roberson received a B.S. in Nuclear Engineering from the University of Tennessee, Knoxville.

"I am honored to be here at the Department of Energy as the new Assistant Secretary for Environmental Management. I look forward to serving in this administration and appreciate having Secretary of Energy Spencer Abraham's strong support. This is indeed one of the toughest and most challenging jobs in the government. The Secretary, the Congress and the public have high expectations for this program; I am eager to begin getting the kind of performance the public expects, and deserves."

Statement from Jessie Hill Roberson,
Assistant Secretary for Environmental Management

In This Issue...

Three Mile Island Closure.....2
Hanford-River Progress.....3
Spotlight on SRS.....4
Safety Corner.....6
Pit Viper Protects Workers.....8
SSAB Spotlight.....9
Site Shorts.....10
DOE Reaches Out.....11

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Capping Off a Closure Milestone

Waste disposal at the Weldon Spring Site Remedial Action Project was completed as of June 3, 2001. The waste, comprised mainly of building debris from the 44 structures that once stood on the site, is now entombed in a permanent disposal cell located at Weldon Spring. The 1.48 million cubic yard disposal cell also contains asbestos, concrete rubble, soils, metals, chemically stabilized and solidified grout and other debris generated by the former uranium and chemical processing site. Built out of compacted clay, the disposal cell is engineered to restrict settling, minimize waste volume and retard radon emissions engendered by the waste. A project that took 15 years to complete, the disposal cell is considered a milestone in the final chapters leading up to closure of the Weldon Spring Site, scheduled for 2002.

For more information, contact Susan Meyers on (636) 441-8086 ext. 2703.

Three Mile Island: Closure at Last?

The Department of Energy's Idaho National Engineering and Environmental Laboratory (INEEL) completed the last transfer of Three Mile Island (TMI) accident-spent nuclear fuel and core debris from underwater storage to dry storage last spring. The project was completed six weeks ahead of schedule.

When the last of the canisters holding the TMI material was slipped into dry storage, it ended a complex, six-year effort involving hundreds of workers at two facilities and numerous INEEL organizations.

INEEL's involvement with TMI began within a day of the March 28, 1979 accident in Pennsylvania. Since then, INEEL personnel and facilities played key roles in helping DOE and the TMI owner, GPU Nuclear, recover from the accident, gain knowledge from the accident, remove the damaged core material from the reactor vessel, and ship the material across the country for temporary storage at the laboratory.

Placing the material in a Nuclear Regulatory Commission-licensed dry storage facility makes the TMI material "road ready" for placement in a NRC-licensed permanent repository outside Idaho, once one is designated and opened.

A shipment of TMI spent nuclear fuel and core debris travels down the highway at the Idaho National Engineering and Environmental Laboratory on its way to the dry storage facility. Twenty-nine such shipments were made to move the TMI material into dry storage.

For more information, contact John Walsh at INEEL on (208) 526-6864 or at JHW@inel.gov.

Lasagna™ A Recipe for Success

Just one year after the Lasagna™ treatment process began operating at the Paducah Gaseous Diffusion Plant in Kentucky, Paducah Site Manager Don Seaborg reports that initial sampling shows the treatment process is reducing tricholoroethylene (TCE)—a major contaminant at many Department of Energy (DOE) and industrial sites—faster than expected.

Lasagna,™ named for its layered treatment zones, is not only more effective but relatively cheap, with costs expected to be two-thirds less than alternate solutions. It leads to complete destruction of TCE and its toxic byproducts with little personnel exposure, minimal aboveground equipment and no excavation. Construction of the process began in late 1999 and operations are expected to continue for two years, with an option for a third year if necessary.

The Lasagna™ process is the result of a successful collaboration among the DOE, the Environmental Protection Agency, Monsanto, DuPont, and General Electric. "Development of the Lasagna™ process is a model for the effective teamwork between government and private industry," comments Seaborg. "This innovative effort proves we can develop new ways of doing business that offer faster, better and more cost-efficient solutions."

For more information, contact Frank Juan on (865) 576-0885.

Hanford Progresses on Columbia River Corridor Cleanup

The Hanford Site in Richland, Washington is making progress in its goal to clean up and restore the Columbia River Corridor.

DOE-RL and its contractor, Fluor Hanford, Inc. (FH), successfully moved the first Multi-Canister Overpack full of spent nuclear fuel from the K Basins—large water-filled basins—away from the Columbia River last winter. Since then, RL and FH have safely stored sixteen overpacks in the Canister Storage Building and continue to clean and load fuel into additional overpacks for storage pending completion of a national geologic waste repository.

Approximately 2,100 metric tons of spent nuclear fuel are currently stored in the K Basins. The goal is to eventually move all the spent fuel away from the K Basins, near the Columbia River. This is a key component of RL's work to clean up the Columbia River corridor.

"The K Basins contain more than 55 million curies of radioactivity and pose a threat to the environment second only to Hanford's high-level waste tanks," says RL Manager Keith Klein. "When we complete the entire project in 2007, we will have removed more than 99 percent of the radioactivity from the Columbia River Corridor—eliminating the K Basins' threat to the river and the surrounding environment."

Since the project began last winter, DOE has safely stored sixteen overpacks in the Canister Storage Building.

In a related story, the DOE-RL and FH River Corridor Project team has made significant progress in four major areas of cleanup of the 300 Area along the Columbia River Corridor: uranium disposition, hot cell cleanout, building deactivation, and wastewater disposal. Highlights over the last several months include reducing Hanford's uranium inventory and cleaning out highly contaminated facilities.

Late this spring, the River Corridor Project team completed shipments of uranium from the Hanford Site 300 Area to DOE's Portsmouth Site in Ohio. Only about half of Hanford's original uranium inventory remains onsite.

Another area of progress in the 300 Area is hot cell cleanout. The team has been working to remove mixed waste and non-mixed waste from the 324 Building hot cells using several innovative techniques, including a robotic crawler. They completed the mixed waste cleanout and shipments this past March. The non-mixed shipments were completed in July.

For more information on the spent nuclear fuel movement, contact Colleen Clark on (509) 376-7501. For more information on the 300 Area cleanup, contact Andrea Powell on (509) 376-7501.

The B Cell, the largest of several shielded hot cells located in Hanford's 324 Building, was once used to examine and test nuclear fuel and other irradiated materials.

Hanford First to Comply with DOE Plutonium Standards

Using equipment designed and built by the Savannah River Technology Center, the Hanford Plutonium Finishing Plant produced the DOE Complex's first container that is fully compliant with new packaging standard for plutonium.

The new packaging standard requires plutonium material be stored in two concentric, welded, stainless steel containers.

First, stabilized material is packed into a stainless steel container with a screw top lid. That container is put into an inner storage container, filled with helium (an inert gas that limits corrosion) and welded shut. The final step is to place the welded inner container into the slightly larger outer container also welded shut. This creates the final package for safe, long-term storage for up to 50 years.

For more information, contact Colleen Clark on (509) 376-7501 or visit the Hanford website at www.hanford.gov.

SPOTLIGHT ON SAVANNAH RIVER

The Savannah River Site (SRS) in Aiken, South Carolina continues to make major strides in its cleanup efforts. They are shipping waste off-site, cleaning up ground water and dismantling out-of-use facilities.

Maiden Shipment to WIPP

In May, Savannah River stakeholders and workers bid adieu to the first shipment of transuranic (TRU) waste headed from SRS to the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico.

The shipment, which contained 42 drums of TRU waste, is the first of seven SRS shipments to WIPP planned for fiscal year 2001. During the next 33 years, SRS plans to ship about 11,000 cubic meters of TRU waste to WIPP in about 1,800 shipments.

"This shipment represents a milestone for Savannah River, allows the site to focus on disposal rather than only storage, and is a major accomplishment in our efforts to clean up the legacy of the Cold War," says Spencer Abraham, Secretary of Energy.

Savannah River "Gets the Lead Out"

The Savannah River Site gets a real charge out of saving SRS cleanup dollars.

The site recently shipped over 40,000 lbs. of lead from broken batteries to an off-site recycler, saving more than $100,000 by not having to store the batteries as hazardous waste.

The batteries came from a closed SRS waste disposal site known as the L-Area Burning/Rubble Pit where both open pit dumping and waste burning took place from 1951 to 1978. The pit was then covered with soil and abandoned.

In 1998, SRS site investigators completed a characterization and evaluation of the pit—including exploratory trenching to allow visual inspection of the wastes. The trenching uncovered 1,320 broken and unbroken lead batteries, a discovery that led to a "time-critical" removal.

The unbroken batteries, each about the size of a suitcase, were shipped to a Pennsylvania battery plant for recycling. The ERD Reactor Areas Project Team deemed another 40,000 pounds of lead plates from broken batteries scrap metal and not hazardous waste. They were sent to a scrap metal recycler in Missouri.

Ground Water Cleaned Up

Late last year, the site achieved a milestone, surpassing the four-billion-gallon mark in ground water cleanup.

A primary treatment technology employed in Savannah River ground water cleanup is air stripping, a treatment technique which vaporizes contaminants in ground water. Common contaminants at the site are chlorinated industrial solvents that contain carbon, hydrogen, oxygen, chlorine and other elements.

Risk Reduction: the Cost-Effective Mode

The Savannah River Site's 284-F Powerhouse was once ranked as the highest risk inactive facility on the site. Now it's gone, dismantled and removed using an Assets-for-Services (AFS) contract that saved millions. To offset the cost of dismantling the Powerhouse, the contract stipulated a transfer of surplus government assets to the subcontractor who performed the dismantling . As a result, the contract was for less than $600,000, compared to the estimated cost of $3.3 million.

The Powerhouse, constructed in 1953 to provide steam, was shut down in the mid-1980s. In 1998, SRS conducted a hazard assessment that identified several significant hazardous conditions, including structure and stacks deterioration and exposed asbestos. SRS then transferred the facility to its Facilities and Disposition Department (FDD), which manages inactive facilities.

FDD reduced the most imminent risks immediately, then recommended that the contractor, DEMCO (Demolition Environmental Management Company), complete dismantlement using an AFS contract.

For more information, contact Bill Taylor on (803) 725-2889 or visit the SRS website at www.srs.gov.

The 284-F Powerhouse before.

The 284-F Powerhouse after.

Portsmouth Brings Down the House

Constructed nearly half a century ago, it took only 38 minutes to bring a small concrete block structure to the ground at the Portsmouth Gaseous Diffusion Plant in southern Ohio. The demolition of the X-701A Lime House signifies another step in the progress toward cleanup at the uranium enrichment facility that recently ceased operations.

The X-701A Lime House at Portsmouth before demolition.

The Lime House formerly contained the plant's lime slaking apparatus. Lime was slaked (crumbled) in fresh water and added to wastes that were placed in an adjacent pit to neutralize spent acids and alkali solutions discharged from a chemical cleaning facility.

The adjacent neutralization pit, deactivated in 1988, is currently being removed in accordance with Ohio Environmental Protection Agency requirements as part of the environmental restoration activities at the site. The pit is being excavated along with twelve inches of soil from around and beneath the tank. The area will be backfilled with clean soil and a liner will be installed to prevent infiltration. Topsoil and local hardy grasses will also be added to the surface and then graded to promote drainage. All fieldwork will be completed by the fall.

Workers clean up final debris from the X-701A Lime House.

Envirocare Takes Portsmouth's Scrap Metal

Since the project began last November, more than 755 tons of scrap metal have been shipped from the Portsmouth Gaseous Diffusion Plant to the Envirocare disposal facility in Utah, and another 925 tons have been cut and packaged awaiting disposal.

Upon completion of the project, about 5,200 tons of low-level radioactive contaminated scrap metal that has been stored in a seven-acre outside storage yard since the early 1970s will be removed.

To prepare the scrap metal for shipment, workers are size-reducing the metal and packaging it into large boxes for shipment. Approximately 149 truck shipments will be required to meet the current goal of cutting and shipping 1,300 tons of scrap metal off-site this fiscal year.

For more information, contact Sandy Childers on (740) 897-2336.

A worker prepares a shipment of scrap metal at the Portsmouth Gaseous Diffusion Plant, destined for disposal at the Envirocare facility in Utah.

SAFETY CORNER

Taking Safety Seriously at DOE

At Department of Energy (DOE) sites around the country, contractors, management teams and employees are more committed than ever to working safely.

Several sites where the safety culture has excelled recently include Fernald, WIPP, Savannah River and Hanford.

Fernald

Early this summer, employees at DOE's Fernald Environmental Management Project (FEMP) reached seven million safe work hours without a lost-time injury or accident. This milestone surpasses the five million hours met in 2000 and represents the longest consecutive safe work hour streak since the site began its environmental restoration mission.

Additionally, DOE and the Occupational Safety and Health Administration awarded Fernald Star Status for the Voluntary Protection Program (VPP) following a site visit and review of Fernald's Safety and Health program last March. The DOE VPP is designed to mitigate risk in the workplace by encouraging excellence in Safety & Health programs that can only be achieved through full involvement and commitment by management and employees.

www.fernald.gov.

WIPP

This past spring, workers at the Waste Isolation Pilot Plant surpassed a safety milestone by working more than two million man-hours without a lost-time accident. This is especially notable considering they reached this milestone while adding a second shift of workers and mining a new underground disposal panel. According to the National Safety Council, facilities with the same industry code as WIPP lose an average of 20.6 workdays (164.8 man-hours) each year to accidents.

www.wipp.carlsbad.nm.us.

Savannah River

Also this summer, over 12,000 Westinghouse Savannah River Company Team employees marked a major milestone. They worked 225 days and more than 13 million hours without a lost-time injury or illness, establishing a new safety record at the site.

Setting the new safety record follows closely on the heels of another significant safety accomplishment by the team—receiving the DOE VPP Star Status earlier this year.

www.srs.gov.

Hanford

And not to be left out, this past July workers at Hanford's Environmental Restoration Disposal Facility marked five million hours worked without an accident.

www.hanford.gov.

Hanford Drivers Go the Distance Accident-Free

They could have driven around the earth 200 times, made ten round trips to the moon, or driven the Daytona 500 ten thousand times. Instead, drivers for Hanford's Environmental Restoration Project have driven more than five million miles back and forth across the 586 square-mile Hanford site without an at-fault accident.

"The constant focus on safety by the drivers and mechanics, and excellent teamwork between Bechtel Hanford drivers, Hanford Atomic Metal Trades Council and RCI Environmental, our subcontractor, has made this accomplishment possible," says Tom Logan, Bechtel Hanford Vice President of Operations. Bechtel Hanford manages the ER Project for the U.S. Department of Energy.

"The drivers are some of the very best in the trade," Logan adds. "They take the time to look out for their own safety in addition to the well-being of others on the road. They take a lot of pride in what they do."

Waste is transported from remediation projects at numerous locations throughout the site to the Environmental Restoration Disposal Facility (ERDF) in the center of the site. Since 1996, drivers have made about 152,000 trips in trucks weighing up to 80,000 pounds fully loaded.

Their work is directly tied to the successful cleanup efforts at Hanford. In July, workers at ERDF marked an additional milestone—three million tons of contaminated soil safely deposited. Three million tons marks 30 percent of the estimated contaminated soil at Hanford.

For more information, contact Mike Talbot, DOE-RL, on (509) 376-5632.

TRIPS Technology Nationally Recognized

The White House honored the Idaho National Environmental and Engineering Laboratory (INEEL) with the 2001 Closing the Circle Award for developing a new electronic signature for the Transuranic (TRU) Reporting, Inventory and Processing System (TRIPS) database used to manage and ship TRU waste to the Waste Isolation Pilot Plant (WIPP).

With TRIPS, users can "sign" data residing in hundreds of databases. The system gathers the data, shows it to the user as an electronic form, verifies the signature authority, and remembers and saves exactly what the user signed. Regardless of subsequent changes in information, the integrity of the users' signature and the form he or she signed remains unbroken.

"Using electronic signatures in the process has increased our productivity by at least 50 percent," says Thomas Monk, INEEL project manager. "The benefit is not only noticed in the reduction of paper produced but in the total cost to the project." DOE nominated the technology after it won first place in the "Sowing the Seeds of Change" category in the annual DOE Pollution Prevention Awards program.

"This award and the success of TRIPS demonstrates INEEL's ability to use R&D expertise to implement state-of-the-art solutions for DOE's environmental problems," states INEEL President Bernie Meyers. "Meeting our commitment to the state of Idaho and its citizens to ship waste to WIPP is vital. TRIPS is one tool to get us there."

The INEEL received the 2001 Closing the Circle Award in June, in recognition of the best in governmental environmental programs.

For more information, contact Kathy Gatens on (208) 526-1058 or at kzc@inel.gov.

Award Winning Approaches Shared by Everyone

DOE Team Wins Hammer Award

A team of employees from the U.S. Department of Energy-Headquarters (DOE-HQ), DOE Richland Operations Office (RL), and DOE contractors representing the National Facility Deactivation Initiative won a prestigious Vice Presidential Hammer Award. With the help of the U.S. Environmental Protection Agency and the Washington State Department of Ecology, they developed a new approach to facility decommissioning that has saved more than $100 million at the Hanford Site. The award recognized the team for sharing this successful technique with the rest of the DOE complex.

"As we work toward our outcomes—restoring the river corridor, transitioning the Central Plateau, and preparing for the future—innovative approaches such as the one this team developed will be key to our success," says RL Manager Keith Klein. "It's critical that unused facilities be cleaned up and safe, to reduce both the threat they pose and the expense of maintaining them. This is an integral piece of the Hanford cleanup, and I'm extremely proud of the team's work."

The National Facility Deactivation Initiative team improved the approach used to decommission Hanford's former nuclear processing facilities. This dramatically shortens schedules, ensures the safety of workers and the environment, and saves taxpayers tens of millions of dollars a year.

For example, at the Plutonium-Uranium Extraction Plant (PUREX), the decommissioning project was expected to take five years and cost $800 million. By adding a deactivation step to the process and taking a fresh look at procedures, workers were able to complete the project in June 1997—16 months ahead of schedule. This early completion reduced the required annual surveillance and maintenance costs from $33 million to about $1 million.

The lessons learned at PUREX were applied to the Hanford B Plant deactivation, which was completed in October 1998—four years ahead of schedule—and saved $100 million. A similar approach will be used at the Plutonium Finishing Plant, which officials expect to be able to demolish by 2016, 24 years ahead of the previous schedule, at a cost savings of more than one billion dollars.

This approach is also in use at Rocky Flats, Savannah River, Nevada, and Oak Ridge sites and the Brookhaven National Laboratory.

For more information, please contact Mike Talbot on (509) 376-5632.

Pit Viper Protects Workers from Radiation

Radiation dose to personnel working in highly contaminated nuclear tank waste equipment pits may be reduced by as much as 75 percent thanks to the Pit Viper—a remotely operated cleanup system unveiled by the Department of Energy's Pacific Northwest National Laboratory (PNNL).

The most dose-intensive work under Hanford's River Protection Program is the repair and refurbishment of hundreds of equipment pits on the nuclear site. The goal of the Pit Viper system is to remove workers from high radiation zones and complete as much work through remote means as possible. Project managers believe this may result in a potential 50 to 75 percent reduction in radiation exposure to workers as well as a significant reduction in manpower.

More than 600 tank waste equipment pits are located adjacent to Hanford's 177 underground storage tanks. The rectangular concrete pits lie below ground and contain valves and pipe couplings designed to allow transfer of highly radioactive waste from one underground tank to another, which will be essential once construction of Hanford's vitrification plant is complete around 2007. Millions of gallons of liquid radioactive waste will be transferred through miles of underground piping and numerous equipment pits to be treated and immobilized for disposal.

These pits are contaminated and must be inspected, cleaned, decontaminated, and refurbished before the transfer of the tank waste can begin. Workers must repair or remove equipment within the pits, conduct radiation mapping or characterization, remove debris, repair wall cracks, and clean, prep and paint walls.

To perform these tasks, the Pit Viper uses a hydraulic manipulator arm mounted to a backhoe that is capable of lifting 200 pounds while fully extended. It is operated remotely from a console in a control trailer located up to 200 feet away from the equipment pit. Operators work in a clean, safe environment while viewing cleanup activities on television monitors.

PNNL partnered with CH2MHILL Hanford Group, Inc., Numatec Hanford Corporation and the Oak Ridge National Laboratory to produce the Pit Viper system for the Office of Science and Technology Tanks Focus Area and the Robotics Crosscut Program.

For more information, contact Mike Talbot, DOE-RL, on (509) 376-5632.

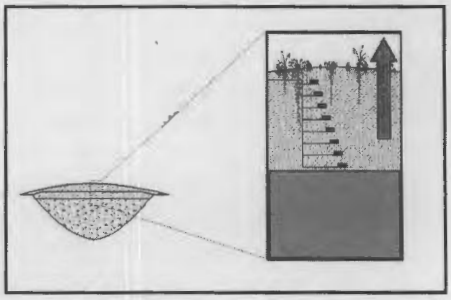
Natural Technology Saves Millions at NTS

Most people are familiar with the "better, faster, cheaper" slogan, but a team of experts from the DOE Nevada Operations Office put it to the test when designing the closure plan for a radioactive waste disposal unit at the Nevada Test Site (NTS). Using native materials to construct the cover rather than bringing in clay and soil has resulted in an effective solution with a five-million dollar savings.

The disposal unit is in one of the most arid regions in the country. Since most landfill covers are composed of a combination of soil and natural clay, they tend to dry and crack in areas where rainfall is scant. In addition, these covers can be quite costly in the western United States where clay is not readily available. The cost of installing this type of cover can easily reach more than $2 million per acre. Since this disposal unit measures nearly 7.5 acres, it quickly became apparent that cost would be a major factor in the approach to closure.

The project team deemed an "ET" (evapotranspiration) cover—a top performer in arid conditions—the best solution. The ET cover consists of a compacted soil barrier layer topped with a layer of native vegetation. The process of plant transpiration—movement of moisture through a plant from the roots to the atmosphere—facilitates evaporation of moisture from the disposal unit. This method expedited efforts to complete remediation required to close the waste disposal unit, and saved millions of dollars in the process.

Using the innovative ET technology, the NTS disposal site has now been closed. A perimeter fence will be constructed and monitoring efforts will continue to ensure the long-term effectiveness of the approach.



For more information, contact Carla Sanda on (702) 295-2910.

SSAB SPOTLIGHT

Northern New Mexico CAB

The Department of Energy chartered the Environmental Management Site Specific Advisory Board (SSAB) in 1994. The Northern New Mexico Citizens' Advisory Board (NNMCAB) at Los Alamos operates as a local SSAB under this charter.

The NNMCAB conducts monthly public meetings and numerous committee meetings. The Board is involved in environmental issues at the Los Alamos National Laboratory and makes formal recommendations to the DOE on these issues.

Some of the most recent issues with which the CAB has been involved include:

- cleanup of radioactive contamination to reasonable levels in Acid Canyon, a popular hiking area;
- the study and cleanup of Material Disposal Areas that have the potential to release contaminants;
- long-term drinking water protection, looking at water and contaminant movement from the surface to the regional aquifer; and
- reducing the timeline and costs of shipping waste to WIPP, an issue that was highlighted by the Cerro Grande Fire in May 2000.

The NNMCAB also hosted the last semi-annual SSAB Chairs Conference in Santa Fe in August.

For more information on the NNMCAB including SSAB Chairs' Conference details, please visit the website at www.nnmcab.org.

The NNMCAB was the first SSAB to formally congratulate Secretary Abraham on his appointment. From left to right, NNMCAB Vice-Chair Jim Johnston, Chair Menice Manzanares, Secretary Abraham.

Students Get Real World Experience Serving on SSABs

It may not be as traditional as being on the football team or cheerleading squad, but for East Tennessee high school students serving on the Oak Ridge Site-Specific Advisory Board (ORSSAB) and advising the Department of Energy (DOE) on its Oak Ridge Environmental Management (EM) Program, it is time well spent.

High school seniors Avalon Mansfield and Shane Bellis.

"Oak Ridge is the only Board to have student representatives," says Rod Nelson, DOE-Oak Ridge Assistant Manager for EM. "The students participate in Board trips and other activities. We really appreciate their taking time to participate in the SSAB."

"We began working on this when several of our members reported back to the Board about the students who participated in the National Intersite Discussions sponsored in June 1998 by the League of Women Voters," explains Steve Kopp, leader of the committee that spearheaded the effort to bring students into the Board. "Our members came away with a very positive impression of the way the students conducted themselves and a real appreciation for the perspective the young people brought to the proceedings."

One student is selected each year from Oak Ridge High School and the other is chosen on a rotating basis from high schools surrounding Oak Ridge. The students are selected by their schools' administration.

Although they are non-voting members, the students study and debate EM Program issues and participate in Board and committee activities and meetings just like every other ORSSAB member.

Luther Gibson, ORSSAB Chair, sums up the Board's thinking about the importance of including students. "The legacy of DOE activities on the Oak Ridge Reservation will be with us for a long, long time, so it's crucial that the next generation, as well as those that follow, be informed, active participants in remediation decision-making. We owe it to them to teach them, and they owe it to themselves to take responsibility for the world they are to inherit."

For more information about the ORSSAB visit www.oakridge.doe.gov/em/ssab.

SITE SHORTS...SITE SHORTS...SITE SHORTS

Portsmouth to Reindustrialize

The Department of Energy's Oak Ridge Operations Office has prepared an Environmental Assessment (EA) that could pave the way for reindustrializing the 3,700-acre federal reservation at the Portsmouth Gaseous Diffusion Plant.

The draft EA evaluates the potential impacts of reindustrialization of suitable land and facilities on the plant site. The final EA is expected to be completed by this fall.

DOE proposes to transfer real property by lease and/or disposal to other organizations for commercial or industrial use.

This transfer would potentially offset regional economic impact from workforce restructuring at the plant and diversify the future economic base of the area.

For more information, contact Sandy Childers on (740) 897-2336.

Foreign Spent Fuel Shipments Completed Safely

The Foreign Research Reactor Spent Nuclear Fuel Acceptance Program completed its 21st shipment in June 2001. Nine casks of fuel were transported to the United States from Germany, Austria and the Netherlands. The shipment arrived at the Savannah River Site in June where the majority of the fuel will be stored. The remainder of the fuel (three casks) was transported by truck to the Idaho National Environmental and Engineering Laboratory for management and disposition. Extensive coordination was undertaken with the states along the cross-country route and safety enhancements were applied to support this shipment.

For more information, contact Maureen Clapper at DOE on (202) 586-8013.

Blue Team's Blue Ribbon

WIPP miners can work comfortably, knowing that should an emergency arise, a well organized, trained and equipped group of mine rescue experts will be available to respond. The Blue Mine Rescue Team from the Waste Isolation Pilot Plant beat out heavy competition and won first place in the recent Southern Regional Mine Rescue Competition in Louisiana. This was the WIPP Blue Team's third victory in the past eight months. The team also placed first in the Southeastern Missouri Regional Mine Rescue Competition in October 2000 and the Southwestern Regional Mine Rescue Competition last April.

Mine rescue competitions are designed to test the knowledge of miners who might be called upon to respond to a real mine emergency. Competitors solve problems in the field, decipher maps, and take written exams.

"The Blue Team unquestionably sets the standard for excellence in mine rescue," says Candice Jierree, Environment, Safety and Health Manager with Westinghouse TRU Solutions LLC. "Each member of the team has a specialty, but they are an extremely close-knit and generous group. They offer assistance not only to each other, but also to miners from other organizations."

For more information, visit the WIPP website at www.wipp.carlsbad.nm.us.

International Exchange

The Carlsbad Field Office (CBFO) hosted representatives from the Swedish Nuclear Fuel and Waste Management Company (SKB), local officials and officials from the Waste Isolation Pilot Plant (WIPP) in a technological exchange of lessons learned. SKB is in the process of choosing a site to build a repository for high-level, long-lived nuclear waste in Sweden. The issues CBFO encountered prior to WIPP's opening were explored including societal and political aspects of the repository siting.

This was the first organized technical exchange between Sweden and CBFO. The workshop covered a broad range of repository siting issues experienced in both the U.S. and Sweden over the past 25 years.

For more information, visit the WIPP website at www.wipp.carlsbad.nm.us.

Fernald Provides Shared Lessons

DOE and Fluor Fernald managers from the Soil and Disposal Facility Project recently met with representatives from DOE-Portsmouth, Bechtel Jacobs, the Environmental Protection Agency, and the Ohio EPA to discuss the elements of the design, construction, and operation of an on-site waste storage facility. Fernald has been operating an On-Site Disposal Facility (OSDF) for three years. Project managers shared lessons learned and presented technical information. Stakeholder acceptance and expectations were discussed, including on-site waste storage and future OSDF challenges such as long-term monitoring and maintenance.

For more information, contact Gary Stegner on (513) 648-3153.

DOE Reaches Out to Its Community ...And Beyond

DOE Donates Its Excess

The Department of Energy (DOE) is committed to working with the communities where its sites are located. For example, teaming up with Colorado Congressman Scott McInnis's office, DOE's Grand Junction Office (GJO) donated excess computers to the School District 51 Career Center, located in Grand Junction, Colorado.

Operation S.E.E.D.S. (Sharing Electronic Equipment District and Statewide) is a program started by Congressman McInnis in 1996 to provide excess scientific and technological equipment to schools and other educational organizations in Colorado, Arizona, New Mexico and Utah.

This is the third time DOE-GJO has donated equipment to the Career Center, totaling around 200 central processing units, 170 monitors, 35 laptops, 70 printers and a collection of other computer accessories. The Career Center is a vocational center for Grand Junction high school students.

Engineering Girls' Futures

At the Savannah River Site, volunteers are taking steps to encourage more females to enter engineering fields, in an effort to head off the rapidly approaching shortage of trained engineers. They recently organized "Introduce a Girl to Engineering Day," where approximately 30 area middle-school girls participated in hands-on activities designed to introduce them to careers in engineering. The girls played career discovery games, viewed demonstrations, and participated in building projects and critical-thinking challenges.

The Savannah River Operations Office provides a variety of science and literacy outreach programs to enhance interest in science, mathematics, engineering, and technology.

Local middle school girls are fascinated by the technology introduced to them at the Savannah River Operations Office's "Introduce a Girl to Engineering" workshop.

Across the country at the Los Alamos National Laboratory, female scientists, engineers, and professionals provided hands-on training to cultivate girls' interest in math and science. The Expanding Your Horizons program provided workshops for girls in grades eight through ten where they participated in web page development, robotics, fluid instabilities and veterinary medicine. Nominated by their schools, the attending girls were from northern and central New Mexico.

Portsmouth Uses Nature to Its Advantage

Two natural approaches are being used at Portsmouth to clean up ground water more quickly: bioremediation and phytoremediation.

Bioremediation—using bacteria to "eat" contaminants—will be used on a one-acre section of a plume of ground water that is contaminated with trichloroethylene (TCE), an industrial degreaser formerly used at the Gaseous Diffusion Plant. If successful, the bioremediation technology will be used on a 75-acre ground water plume on the south end of the plant.

Phytoremediation is a process where the deep root system of planted trees rids ground water of contaminants and is already approved for use at the site. Phytoremediation is already in use at other sites in the DOE complex, such as in Monument Valley, Arizona.

With these natural approaches, DOE hopes to clean up the site in five years instead of the thirty it would take with conventional ground water pump and treat systems.

For more information, contact Sandy Childers on (740) 897-2336.

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RECLAIMING THE PAST TO SECURE THE FUTURE

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 9 • Number 1 Winter/Spring 2000

Assistant Secretary's Site Visits Emphasize Collaboration, Safety

Within a month of being sworn in as Assistant Secretary for Environmental Management (EM), Dr. Carolyn Huntoon embarked on a tour of EM's major cleanup sites, during which time she spoke with hundreds of site employees, local government officials, community groups, and other stakeholders. Dr. Huntoon traveled to the Savannah River, Hanford, Oak Ridge, Idaho, Rocky Flats, Paducah, and Los Alamos sites; the Waste Isolation Pilot Plant; and Sandia National Laboratory.

Touring the sites, getting input from employees and residents, and seeing firsthand the particular cleanup challenges each site faces, Dr. Huntoon sought to strengthen ties between headquarters and the field. "I want to know more about the accomplishments and challenges that you face each and every day," she stated to employees at a Sandia "all-hands" meeting. "I understand what it is like to be on the ground and working on issues and problems that seem far away from headquarters. I'm here to find out from you how we in Washington can help you do your job better and more safely."

Safety is Dr. Huntoon's number-one priority. "While we all want the cleanup to proceed as swiftly as possible, I want no one to lose sight of the fact that the health and well-being of workers, the public and the

Site Visits continued on page 8

Assistant Secretary Huntoon and Kevin Keenan, her Rocky Flats site guide, discuss cleanup challenges.

Mixed Waste Permit Issued to WIPP

The Waste Isolation Pilot Plant (WIPP) received its hazardous waste disposal permit from the New Mexico Environment Department (NMED)—the only permit of its kind issued in New Mexico. Effective October 1999, the long-awaited permit clears the way for transuranic mixed waste from major Department of Energy (DOE) sites including the Idaho National Engineering and Environmental Laboratory and others to be moved to WIPP for permanent disposal.

The state hazardous waste permit now authorizes WIPP to dispose of contact-handled transuranic mixed waste at WIPP, which previously received only transuranic non-mixed waste shipments. Since opening in March 1999, WIPP has received a total of 46 shipments: 17 from Los Alamos National Laboratory, 25 from the Rocky Flats Environmental Technology Site, and four from the Idaho National Engineering and Environmental Laboratory.

WIPP continued on page 7

In This Issue...

EM Reorganizes 2

Fernald Citizens Advisory Board Honored 3

Monticello SSAB Completes Its Mission 4

Tribal Land Return 6

Central Internet Database Provides Stakeholders with Major New Resource 7

Long-Term Stewardship 8

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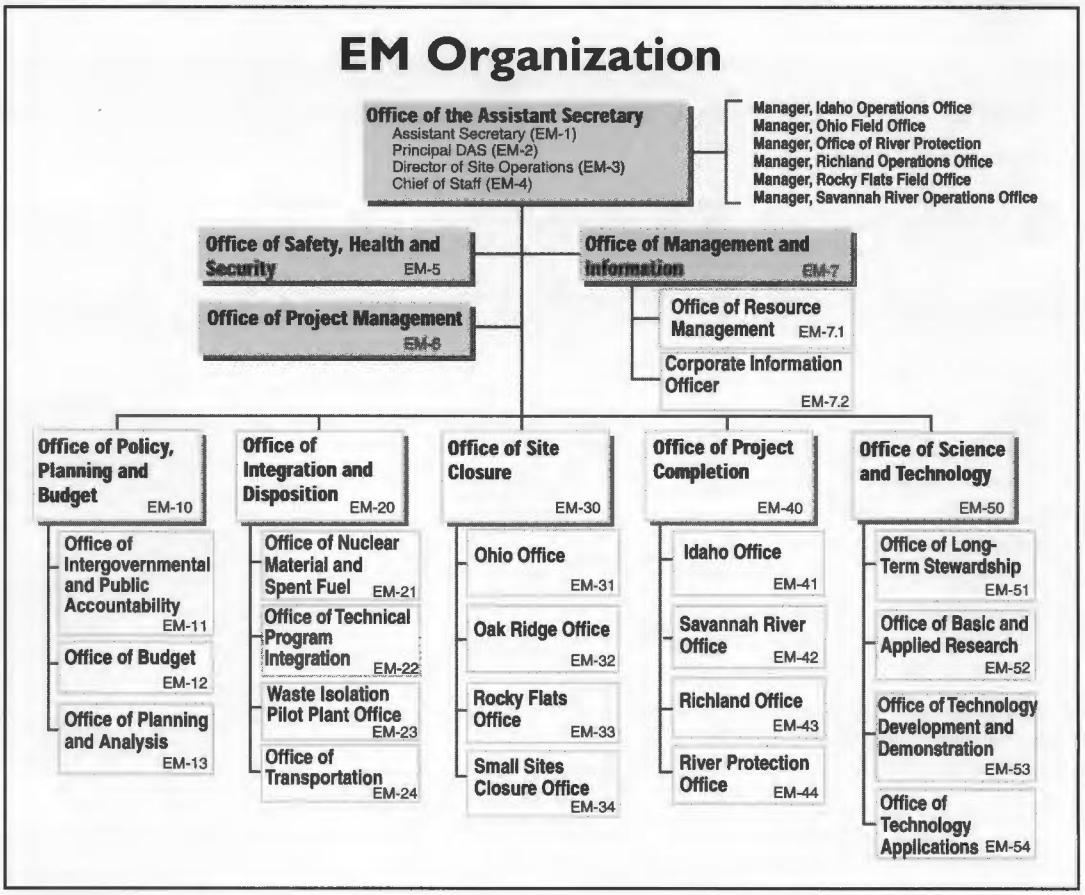
Reorganization to Provide Stability, Improve Management

When Assistant Secretary of Environmental Management (EM) Dr. Carolyn Huntoon took office last year, one of her key goals was to realign the entire Department of Energy's Environmental Management division. Last November, EM completed its reorganization plans.

The EM headquarters reorganization seeks to achieve two major goals. First, the reorganization provides stability to a workforce that has been plagued with uncertainty for the past several years due to downsizing. The second major goal was to implement the secretary's management structure changes to provide clearer lines of authority and responsibility for the field offices.



The reorganization places employees in permanent positions with permanent managers. Functions have been realigned to provide better support to major program goals of closing certain sites and completing cleanup projects and missions at other sites. The reorganization places greater emphasis on field activities, provides clear lines of authority for the six field offices reporting to Dr. Huntoon, and emphasizes the need to better integrate program activities to achieve greater efficiency and consistency across sites.

A number of EM functions were consolidated with the reorganization:

- The Office of Safety, Health and Security (EM-5) was established by combining, consolidating, and strengthening EM's safety, health, security, and quality assurance activities.
- The Office of Integration and Disposition (EM-20) was established to integrate programmatic activities, such as waste management, across sites.
- The Office of Site Closure (EM-30) provides a single focus for sites that are closing by 2006 and for sites that will complete their cleanup missions post-2006.
- The Office of Project Completion (EM-40) oversees activities at the Idaho and Savannah River sites and at the Office of River Protection and Richland Operations Office at the Hanford site.
- The Office of Long-Term Stewardship (EM-51) was created to consolidate the department's responsibilities for monitoring and maintaining sites.
- The Office of Planning and Analysis (EM-13) was expanded and strengthened to combine planning and policy activities, including regulatory functions.
- Acquisition management is now handled by the Office of Resource Management (EM-7.1).
- The Office of Corporate Information Officer (EM-7.2) was established to more effectively manage the program's information needs.

Officials state that, although the reorganization is effective, there is still much to be accomplished regarding personnel issues. EM and the Department's Office of Management and Administration are working on these issues and expect to resolve them within the next six months.

For more information, contact:
Michael Kleinrock, Director of the Office of Resource Management, at (202) 586-2661.

Fernald Site, Citizens Advisory Board Honored for Their Achievements

Cleanup Accelerated and $3 Billion Saved

The Department of Energy (DOE) has been acknowledged for its success in involving the public in its decision making processes. The International Association for Public Participation (IAP2) presented the Public Participation Organization of the Year Award to DOE during a Fernald Citizens Advisory Board (FCAB) meeting on January 15, 2000. DOE was honored specifically for its development of an Environmental Management Site-Specific Advisory Board (SSAB) that involved the public in decisions regarding the cleanup of the former nuclear weapons site at Fernald, Ohio.

Pictured from left to right: Jim Bierer, FCAB Chair; Ken Morgan, DOE Ohio Field Office Public Affairs Director; Martha Crosland, Office of Intergovernmental and Public Accountability Director; John Applegate, former FCAB Chair; Susan Brechbill, DOE Ohio Field Office Manager; Jack Craig, DOE-Fernald Director; and Doug Sarno, FCAB Independent Consultant.

Susan Brechbill, DOE's Ohio Field Office Manager, accepted the award on behalf of Fernald. Said Brechbill: "The award reflects a culture change at Fernald and across the DOE complex. We opened up the decision making process because the public wanted to be involved and had a good reason to be involved. Who is better to have a say in the final decisions than those living across the fence line?"

John Applegate, a member of IAP2, Environment Management Advertising Board Stewardship Committee Chair, and former chair of the FCAB, nominated Fernald for the award. The board's recommendations and advice helped steer Fernald toward an accelerated cleanup that trimmed years from the original cleanup estimate and resulted in an estimated savings of $3 billion dollars.

Public Participation continued on page 10

Budget Request Stresses Quicker Cleanup, Reduced Cost

The Office of Environmental Management (EM) submitted its FY 2001 budget request to Congress, asking for $6.3 billion, about $474 million more than last year's request. At the Senate budget request hearing on February 29, 2000, Assistant Secretary Dr. Carolyn Huntoon stressed that the additional funds are needed to speed up cleanup activities across the Department of Energy (DOE) complex. "This level of funding supports our safety programs... accelerates cleanup at key sites, enables the Department to be substantially in compliance with legal agreements and requirements, responds to Defense Nuclear Facilities Safety Board recommendations, addresses significant safety risks, and continues efforts to develop alternative technologies that can reduce the cost and schedule of cleanup," stated Dr. Huntoon.

The FY 2001 request represents a significant increase over the FY 2000 appropriation, both in traditional budget authority and in funding for privatization projects. EM requested an additional $147 million in traditional budget authority and $327 million more for privatization, an eight percent increase overall. The request will support more shipments of transuranic waste to the Waste Isolation Pilot Plant, accelerated cleanup at the Paducah and Portsmouth Gaseous Diffusion Plants, and the completion of EM cleanup at Argonne National Laboratory-West in Idaho, the Monticello Remedial Action Project in Utah, and the Grand Junction Site in Colorado. According to Dr. Huntoon, the request helps DOE meet accelerated closure schedules at Rocky Flats, Colorado, and at the Mound and Fernald sites in Ohio, and enables DOE to continue progress at all sites, including treatment and disposal of nuclear waste and safe management of nuclear materials. The request will also enable DOE to begin construction of a high-level waste treatment facility at Hanford, and work at the uranium mill tailings site in Moab, Utah.

Dr. Huntoon also stressed that the FY 2001 budget request, while it represents a significant increase, will in the long run enable DOE to reduce the long-term costs of the program. "We will continue to improve our project management, make the most effective use of our unique resources across the DOE complex, use science and technology to reduce costs and schedules, and maintain our focus on worker safety," said Dr. Huntoon.

Access the budget request online at <www.cfo.doe.gov/budget/01budget/index.htm>.

Mission Accomplished at Monticello

With cleanup of the Monticello, Utah, site completed, members of the Environmental Management Site-Specific Advisory Board (SSAB) voted to dissolve the board in October 1999. This is the first of twelve local EM SSABs to have effectively completed its mission. Since its first meeting in November 1993, the Monticello SSAB has been integrally involved in the site's decision-making processes, providing DOE's Office of Environmental Management with policy information, advice, and recommendations on the cleanup of the Monticello site, most of which is nearing completion.

The Department of Energy Grand Junction Office (DOE-GJO) is responsible for environmental remediation work at the Monticello site, which consists of cleaning up the former uranium and vanadium processing millsite, nearby properties, and the groundwater. Contaminated material from the millsite and surrounding properties has been placed in a Resource Conservation and Recovery Act-compliant repository cell, which is currently being designed. Both cleanup of contaminated materials and cell installation are complete with the exception of revegetation, which will be completed this summer. Groundwater monitoring will continue, and the need for groundwater cleanup will be determined in 2005.

One of the important decisions the Monticello SSAB contributed to was the decision to construct a repository cell on-site, two miles from the millsite. Later, board members worked with the DOE-GJO, the Environmental Protection Agency (EPA), and the Utah Department of Environmental Quality (UDEQ) on the final design of the cell, to ensure that it would blend in with the natural terrain.

Board members also encouraged the site to hire and train local workers. After discussions with the DOE-GJO, the latter agreed to encourage subcontractors to hire local San Juan County citizens, when feasible, to work on site remediation. The Monticello SSAB established a subcommittee to report to the SSAB on hiring local citizens. As a result of this joint effort, many Native Americans and other local citizens have been employed by the project over the years.

Lastly, board members were concerned about the future use of the remediated government-owned property and expressed a desire to use the lands for recreational use. The Grand Junction Office entered into a cooperative agreement with the City of Monticello to pay the City to restore the millsite and adjoining properties according to DOE, EPA, and Utah's Environmental Quality Department specifications. The GJO has started the process of designating and transferring the land to the City of Monticello, a process that will be completed this year.

Although the board has been terminated, members will have many opportunities to participate and to share their expertise and insight at future public meetings and on an individual basis regarding ongoing work at the Monticello site.

For more information, contact:
Audrey Berry, Grand Junction Project Office, at (970) 248-7727.

Serving Up "Lasagna" at Paducah

Cleaning up contaminants after they have spread into the surrounding environment is a challenging task. If a pollutant can be captured near its source, however, before it has time to disperse over a broad area, the cost of removing the contaminant can be reduced and cleanup effectiveness can be increased.

DOE's Oak Ridge Operations Office is hoping to demonstrate this principle at the Paducah Gaseous Diffusion Plant with a new technology called the Lasagna™ process. Developed in cooperation with Monsanto, Dupont, and General Electric, the Lasagna technology is a remedial filtering process in which an electrical current drives water through soil. Along the way, the water absorbs contaminants such as trichloroethylene (TCE) from the soil.

The Lasagna process began operation on December 30, 1999, and is currently scheduled to run for two years. Built and operated by CDM Federal Programs, a subcontractor of Bechtel Jacobs Company LLC, the project is intended to reduce TCE concentrations in the treatment zone from 100–500 parts per million (ppm) down to less than 2 ppm.

For more information, contact:
Frank Juan at (865) 576-8540 or via e-mail at <juanfc@oro.doe.gov>.

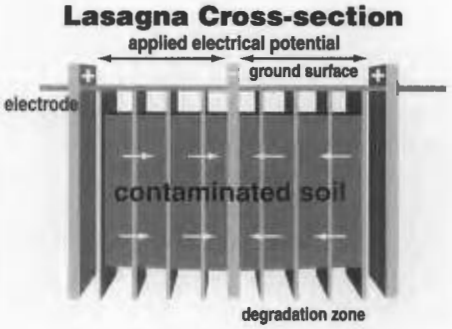


Illustration: The Lasagna™ process works by using buried electrodes to move water through the soil. Applied current drives the water an inch a day from a positive to a negative electrode. The water picks up contaminants and moves them through treatment zones where they are trapped or degraded.

Record of Decision Announced for Waste Treatment and Disposal

After two years of study and discussions with Department of Energy (DOE) field offices and stakeholders, a final Record of Decision was announced February 25, 2000, for the treatment and disposal of low-level waste (LLW) and mixed low-level waste (MLLW) from waste management operations. The decision does not preclude site decisions on whether to construct on-site cleanup waste disposal cells on a particular site (such as those pending at Oak Ridge and Idaho), nor does the decision prevent sites from using commercial treatment and disposal facilities, consistent with existing DOE policy. The decision does enable DOE to move forward with the closure of former defense nuclear facilities such as Rocky Flats and redirect the millions of dollars now being spent on waste storage back into actual cleanup work at the remaining sites.

Under this decision, each site will continue its on-site treatment of LLW as it has in the past. For LLW from waste management operations, DOE will continue to rely on the six site disposal facilities that already have the experience and capacity to handle LLW: Hanford, Idaho, Los Alamos, Nevada Test Site, Oak Ridge, and Savannah River. The use of existing facilities will avoid potential health and safety impacts associated with new facility construction, as well as capital construction costs. For those sites without disposal facilities, DOE will continue to use Hanford and Nevada for disposal of operations-generated LLW from other DOE sites.

For treatment of MLLW from waste management operations, DOE has decided to continue use of the Hanford, Idaho, and Oak Ridge sites, and will also begin to use Savannah River to treat waste from other DOE sites. Since these sites already have MLLW treatment facilities, the decision avoids additional costs for new facility construction. Sites will either treat their operations-generated MLLW on-site or ship it to one of the above four sites. For MLLW disposal, DOE will begin using the disposal facilities already constructed at Hanford and the Nevada Test Site for off-site waste disposal.

Key Definitions

Low-level waste (LLW) includes all radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or by-product tailings containing uranium or thorium from processed ore not classified as hazardous waste.

Mixed low-level waste (MLLW) is LLW that also contains hazardous constituents, such as lead and mercury. MLLW is generated through research, development, and production of nuclear weapons and environmental restoration activities.

The LLW and MLLW disposal decision was based on minimizing impacts to human health, improving operational flexibility, and lowering implementation costs. The decision will maximize the use of existing disposal facilities, thus avoiding construction impacts and costs. Because the decision involves incremental change, it minimizes potential environmental impacts.

Access the Record of Decision online at <ww.em.doe.gov/doclistb.html>

Oak Ridge Disposal Facility Construction Given Green Light

Tennessee and Federal environmental regulators have authorized the U.S. Department of Energy (DOE) to proceed with plans to build and operate a new disposal facility on the Oak Ridge Reservation, the first new disposal site to be constructed at Oak Ridge in 30 years.

The $50 million facility is intended to be a repository for newly-generated radioactive, hazardous, and low-level wastes generated during cleanup operations at Oak Ridge. By operating an onsite facility, DOE will avoid the risks and high costs associated with offsite waste transportation and disposal.

According to Rod Nelson, Assistant Manager for Environmental Management, "We are very excited about reaching this agreement, and consider it to be one of the most important achievements in the Oak Ridge environmental cleanup program. We appreciate the efforts of the parties involved in this process, and in particular, the input we received from area stakeholders through this process."

The onsite disposal facility, or cell, will be located in Bear Creek Valley, southwest of the Oak Ridge Y-12 Plant. The facility will be an engineered, above-grade, earthen disposal cell, equipped with a leachate collection and transfer facility, and monitoring facilities. The cell design includes an underlying geologic buffer or clay liner, a multilayer base liner system consisting of both synthetic and natural materials, a double leachate collection and detection system, a protective soil layer, and a multilayered cell cover. The facility is expected to occupy from 22 to 44 acres, depending upon the ultimate volume of wastes generated during cleanup activities.

Wastes stored in the disposal cell will consist primarily of contaminated soils and debris. An estimated minimum of 300,000 cubic yards of radioactive, hazardous, and mixed wastes generated through Oak Ridge cleanup programs over the next several years will be disposed of in the facility.

DOE will be responsible for closing the facility when cleanup activities at Oak

Oak Ridge continued on page 10

Tribal Land Return Lauded as the "Right Thing" by Secretary Richardson

Lands Could Be Resource-Rich

The federal government has proposed to return 80,000 acres of potentially oil-rich Utah land to a Ute Indian tribe, according to the Department of Energy (DOE). The transfer of land would mark the largest voluntary return of public lands in the lower 48 states in more than a century. "We're doing the right thing: the right thing for the environment, the right thing for the Utes, the right thing for the State of Utah, and the right thing for the American people," Secretary of Energy Bill Richardson said in a press release on January 14, 2000.

The land to be returned is DOE's Naval Oil Shale Reserve Number 2, an undeveloped tract of land in the northeastern corner of the state, which sits next to the 4.5 million acre Uintah and Ouray Reservation. The land was given to the Utes in 1882, but in 1916 it was taken back from the tribe when the U.S. Navy needed potential oil reserves to fuel ships during World War I. The reserve was never tapped. The DOE said it ruled out selling the oil reserve because of its cultural importance to the tribe.

The agreement was signed by Secretary Richardson, Interior Secretary Bruce Babbitt, Ute Tribal Business Committee Chairman O. Roland McCook Sr., and Utah Governor Michael Leavitt. "In 1882, the United States identified lands in eastern Utah that were to remain tribal property for all time. Regrettably, this promise, like so many given to the Tribe over the years, proved to be false," said McCook, Chairman of the Ute Tribe's governing body. "As a result of the leadership of Secretary Richardson, however, a portion of the promise is now to be fulfilled. The return of our traditional homelands is not only a great day for the Tribe and its membership, but also may well mark a new beginning for Indian Country as a whole."

Green River Protected Under Agreement

The agreement will also provide for additional environmental protection for a 75-mile stretch of the Green River. The Ute Tribe has agreed to establish a quarter-mile land corridor for this stretch of the Green River. One of the nation's most scenic and famous rivers, the Green River winds across eastern Utah through miles of undeveloped backcountry and ancient canyons.

Tailings to Be Removed from Site

The agreement calls for the cleanup and removal of 10.5 million tons of radioactive mill tailings from the doorstep of two national treasures—Arches National Park and Canyonlands National Park—near Moab, Utah. The radioactive waste sits 750 feet from the Colorado River, just outside Arches National Park, and about 50 miles south of the land being returned to the Utes. The uranium mill tailings are radioactive byproducts from nearly three decades of uranium mining operations. The tailings contain low levels of radioactivity from uranium and radium, as well as hazardous materials such as arsenic, lead, mercury, and other chemicals and metals left by the leaching process used to separate the uranium from the ore.

Under the agreement, the Department of Energy will seek funding and authority to remove the tailings and clean up the site. The cleanup would be regulated by the U.S. Nuclear Regulatory Commission, with participation by the state of Utah. The estimated cost to move the tailings away from Moab is about $300 million.

More than 10.5 million tons of radioactive mill tailings would be removed from the doorstep of two national treasures—Arches National Park and Canyonlands National Park—near Moab, Utah.

Royalty Negotiations Continue

Under the agreement, the tribe can open the land to oil and gas drilling, but will have to pay a percentage of the royalties to the government. The royalty percentage is still being negotiated, but is expected to be about nine percent. DOE estimates that the land holds six trillion cubic feet of natural gas, equal to about 30 percent of the natural gas used in the United States during 1998. There are no estimates of how much oil is located onsite.

For more information, contact:
Bill Wicker at (202) 586-5806 or via
e-mail at <bill.wicker@hq.doe.gov>.

Information Now Available through Central Internet Database

On January 24, 2000, the Department of Energy (DOE) announced the initial release of the Central Internet Database (CID). DOE developed the database pursuant to the terms of an agreement that settled a lawsuit regarding the Office of Environmental Management (EM) Programmatic Environmental Impact Statement (PEIS) with the Natural Resources Defense Council (NRDC) and other organizations, and DOE [*Natural Resources Defense Council, et al. v. Richardson, et al.*, Civ No. 97-936 (SS)]. The settlement agreement required that DOE develop and deploy an integrated database containing available information on waste, facilities, and contaminated media for which DOE has responsibility. The CID is the first data source for waste management and cleanup information to be made available to the public through the Internet and the first to integrate data from multiple DOE sources into a single database.

DOE held a national CID stakeholder forum in June 1999. The purpose of the forum was to solicit stakeholder comments on the structure and format of the Central Internet Database and identify opportunities for continued stakeholder involvement as development of the database proceeds. DOE General Counsel Mary Anne Sullivan provided opening remarks, saying, "This [database] represents a 'win-win' situation that will benefit both DOE and the stakeholders." She also commented that the PEIS Settlement was "the most unusual and creative settlement that DOE has been a party to."

Pursuant to the settlement agreement, the CID provides specified information on DOE's wastes, contaminated media, facilities, spent nuclear fuel, and materials in inventory managed by the Offices of Environmental Management, Defense Programs, Science, and Nuclear Energy. The CID also requires data from Formerly Utilized Remedial Action Program (FUSRAP) sites managed by DOE and sites governed by Section 151(b) of the Nuclear Waste Policy Act that have been transferred to DOE ownership. For each of the categories listed above, DOE will provide the following types of information:

- Location of site/radioactive material;
- Volume or mass of radioactive material;
- Chemical constituents;
- Radioactivity of materials;
- Generator of waste or contaminated materials; and

Database continued on page 11

WIPP continued from page 1

DOE challenged five provisions in the permit. DOE and New Mexico have agreed to delay further litigation concerning WIPP's RCRA permit in order to allow DOE to propose modifications to the permit that would, if granted by the State, resolve several issues DOE has raised in its challenge. Once DOE proposes these modifications, they will be considered by the State according to its existing regulations which require notice to the public and provide an opportunity for comment.

DOE resumed shipping waste to WIPP on March 10, 2000, with a shipment from Rocky Flats. Later this year, DOE expects to ship waste from the Hanford site, the Idaho National Engineering and Environmental Laboratory, the Los Alamos National Laboratory, and the Savannah River Site.

For more information, contact: Donavan Mager, Senior Media Coordinator for the WIPP Division, (505) 234-7518.

"Freedom of Information" at NTS History Center

The Nevada Test Site (NTS) History Center, which opened its doors last July, is moving to a 48,000-square-foot building, located across from the University of Nevada, Las Vegas. The Department of Energy (DOE) opened the center to help meet requirements under its Openness Initiative, the National Historic Preservation Act, the Archaeological Resource Protection Act, and a Presidential Executive Order that mandated that historical documents be made available and accessible to the public.

The History Center highlights 50 years of NTS history through a photographic timeline, memorabilia, interactive computers, and videotape footage of formerly classified films of nuclear weapons testing.

The new facility will provide centralized, public access to more than 350,000 historical documents related to nuclear weapons testing, a public reading facility, access to exhibits displaying historical and archaeological artifacts from the NTS, the complete collection of DOE human radiation experiment documents, and office/laboratory space for Desert Research Institute scientists.

"Making information accessible to the public has been a priority of the Nevada Operations Office for many years," said Kathleen Carlson, manager of DOE's Nevada Operations Office. "We began gathering historical nuclear weapons testing information in 1979, and in 1981, opened the Coordination and Information Center to make the information publicly available. The addition of the History Center and the soon-to-be built History Institute increases access to information and public awareness."

For more information, visit the NTS website at <www.nv.doe.gov> or contact Darwin J. Morgan at (702) 295-3521.

Moving from Cleanup to Long-Term Stewardship

DOE's Change in Mission

In the last decade, the Department of Energy's (DOE) Environmental Management (EM) program has made significant progress in its cleanup strategy. In the process, DOE has also realized that cleanup to levels appropriate for unrestricted use will not be accomplished at many sites. In determining plans for site cleanup, DOE, regulators, and stakeholders first agree on projected land uses for the site. Cleanup levels for the site are then established that are protective of human health and the environment for these projected land uses. Many sites will be cleaned up to levels appropriate for restricted rather than unrestricted land uses and therefore will require stewardship to ensure continued protection of health and safety.

Currently, DOE is performing long-term stewardship activities at dozens of sites. DOE estimates that by 2070 more than 100 sites will require long-term stewardship following cleanup. Recognizing this emerging challenge, Assistant Secretary Dr. Huntoon has identified strengthening the Long-Term Stewardship (LTS) program as one of her key principles for EM.

DOE's newly established Office of Long-Term Stewardship is responsible for field guidance and policy development, technical analysis, and support for long-term stewardship activities in the field. The office is located within and funded through the Office of Science and Technology, which reflects EM's intent to continue investing in science and technology to help ensure that the protections provided by our remedies can be maintained as cost-effectively as possible for the necessary duration. In addition, the office is producing two important documents on long-term stewardship.

Stewardship continued on page 9

EM's Six Principles

1. **Safety**
   Putting the health and safety of workers, the public, and the environment first
2. **Good Project Management**
   Establishing and maintaining sound project management throughout the complex
3. **Science and Technology**
   Applying the best science and technology to remedy problems, reduce costs, and address long-term challenges
4. **Long-Term Stewardship**
   Developing an effective stewardship program for long-term management of DOE sites after cleanup
5. **Keeping our Promises**
   Making good on our word by meeting our commitments
6. **Public Confidence**
   Bolstering public confidence through greater openness, stakeholder involvement, tribal collaboration, and community outreach

Site Visits continued from page 1

environment must come first. I will not sacrifice safety for schedule."

Throughout her tour, Dr. Huntoon stressed her "guiding principles" for EM (see box at left). These principles are designed to ensure that EM conducts its mission with an eye on the future. "I want us to do a better job, and to do a better job we must be prepared to adapt to changing circumstances and to take on new challenges," she said.

Dr. Huntoon brings commitment to the long-time vacant post and is determined to enhance EM's effectiveness by deploying more innovative technologies at the sites. Dubbed the new 'cleanup czar' by some, Huntoon was quoted as saying "we need to restore public confidence by keeping our word when we make a commitment."

For more information, contact:
Matt Nerzig at (202) 586-4472 or via e-mail at <matt.nerzig@em.doe.gov>.

Dr. Huntoon examines monitoring equipment in Building 371, Rocky Flats.

Stewardship continued from page 8

NDAA Report. In the FY00 National Defense Authorization Act (NDAA), Congress directed DOE to produce a report on its existing and anticipated long-term environmental stewardship responsibilities for DOE sites, or portions of sites, that expect to complete environmental restoration, waste disposal, and facility stabilization activities by the end of calendar year 2006. The report is to be submitted to the Armed Services Committees of the Senate and House of Representatives no later than October 1, 2000.

LTS Study. DOE is concurrently producing a national long-term stewardship study under the terms of the settlement agreement with the National Resources Defense Council (NRDC) and 38 other plaintiffs [*Natural Resources Defense Council, et al. V. Richardson, et al.*, Civ. No. 97-936 (SS) (D.D.C. Dec. 12, 1998)]. This national study examines the institutional and programmatic issues facing DOE as it completes the environmental cleanup program at its sites. The LTS study will incorporate input from a public scoping process to solicit issues that should be addressed by the study. A draft of the study is scheduled for release this Spring.

Public Involvement and Identification of Issues

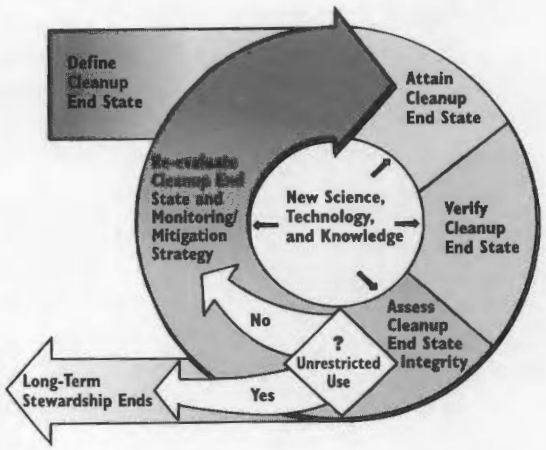
Both the NDAA report and the LTS study are based on a strong foundation of public involvement. Upon requests from Tennessee State regulators and stakeholders in Ohio and Nevada, respective DOE site stakeholder organizations are now actively involved in the collection and compilation of data from the DOE field office for the NDAA report. Similarly, DOE conducted a four-month-long public scoping process for the LTS study that began with a scoping workshop in October 1999 in Oak Ridge, Tennessee, and concluded on February 3, 2000.

Evolving Nature of Long-Term Stewardship Field Work

Providing long-term surveillance and maintenance is nothing new for DOE. For years, DOE has performed long-term stewardship at uranium mill tailing sites where surface contamination has been contained and and large capped disposal cells were built. The Grand Junction Office in Colorado has performed and continues to perform this work, often under a license issued by the Nuclear Regulatory Commission. Increasingly, other types of DOE sites will be closed and will require post-cleanup long-term stewardship. For example, the Pinellas site in Florida was cleaned up and now requires long-term groundwater remediation and monitoring. The staff at the Weldon Springs site are preparing for closure and planning for long-term stewardship. Planning for long-term stewardship will require that the Department work with state and federal regulators as well as local governments, Indian Tribes, and other stakeholders.

For more information, or to obtain a copy of the background document on the issue, contact CEMI at (800) 736-3282 or e-mail <eminfo@cemi.org> or visit the LTS website at <www.em.doe.gov/lts>.

The Dynamic Nature of Long-Term Stewardship



Developments in knowledge and technology will lead to periodic reevaluation of existing end states and will affect cleanup goals and strategies. Improved technologies will create opportunities for more efficient cleanup and more economical approaches to achieving end states in the long-term stewardship process.

Key Definitions

Cleanup, or remediation, is the process of addressing contaminated land, facilities, and materials in accordance with applicable requirements.

End state is the physical state of a site after cleanup activities have been completed.

Long-term stewardship, under the terms of the settlement agreement, refers to: "the physical controls, institutions, information and other mechanisms needed to ensure protection of people and the environment at sites where DOE has completed or plans to complete "cleanup" (e.g., landfill closures, remedial actions, removal actions, and facility stabilization). This concept of long-term stewardship includes: inter alia, land-use controls, monitoring, maintenance, and information management."

Cleanup complete is a condition in which land, facilities, and materials are deemed to be adequately safe and made available for alternative use, based on future land use policy decisions. The phrase "alternative use" does not mean "unrestricted use," and the phrase "adequately safe" may depend on the continued implementation of use restrictions.

Public Participation continued from page 3

According to John Bradburne, President and CEO of Fluor Fernald, "Some of the best courses of action we have taken during the cleanup have come directly from our neighbors." The IAP2 judges cited DOE's success in "overcoming significant citizen distrust to achieve a complex consensus decision in a very difficult area," and were also impressed with DOE's "efforts to maintain an enduring and meaningful relationship with the public at the site."

The IAP2 Core Values Awards recognize excellence and innovation by organizations that involve the public in their decision making process. The winning organization must clearly demonstrate how the seven IAP2 Core Values (see box at right) are reflected in the way in which it conducts its business and serves its clients, partners and/or stakeholders, both internal and external. The seven core values were developed over a two-year period to identify those aspects of public participation that cross national, cultural, and religious boundaries. The purpose of these core values is to help make better decisions that reflect the interests and concerns of potentially affected people and entities.

IAP2 was established in 1990 as a nonprofit corporation to advance the practice of public participation. IAP2 has awarded these awards for the past three years, as part of its mission to promote public participation in relation to governments, institutions, and other organizations that affect the public interest.

For more information, contact: Ken Morgan, Public Affairs, at (937) 865-3968.

Core Values Guide the Practice of Public Participation

The International Association for Public Participation (IAP2) has developed Core Values for Public Participation to help organizations develop and implement meaningful public participation processes to ensure that organizational decision making reflects the interests and concerns of potentially affected people and entities.

1. **The public should have a say in decisions about actions that affect their lives.**
2. **Public participation includes the promise that the public's contribution will influence the decision.**
3. **The public participation process communicates the interests and meets the process needs of all participants.**
4. **The public participation process seeks out and facilitates the involvement of those potentially affected.**
5. **The public participation process involves participants in defining how they participate.**
6. **The public participation process communicates to participants how their input affected the decision.**
7. **The public participation process provides participants with the information they need to participate in a meaningful way.**

For more information about IAP2, visit: <www.pin.org>.

Reverse Osmosis Hits the Road for New Assignment

Unit Leaves Weldon Spring for Ashtabula

The reverse osmosis water treatment unit is on the move again after completing successful deployments at two sites. After finishing a water treatment assignment at Weldon Spring Site Remedial Action Project, the unit is now headed to the Ashtabula, Ohio site.

Upon arrival at Weldon Spring in June 1999, from the Grand Junction site in Monticello, Utah, the unit was used to treat approximately 15 million gallons of water that was unexpectedly contaminated with high levels of selenium and nitrate during grout treatment of 150,000 cubic yards of waste pit sludge. The water treatment unit, which was placed into operation in July 1999, allowed the project to accelerate the water treatment process and avoid a nine-month delay.

The reverse osmosis unit was part of Weldon Spring's water treatment plant operation, which completed dewatering efforts September 30, 1999, and will complete all water treatment operations in May 2000 and begin plant dismantlement. The plant treated over 213 million gallons of contaminated water.

The plant demolition will be completed next summer and be placed in the on-site disposal facility, to become part of 1.5 million cubic yards of contaminated waste entombed in the 45-acre cell.

For more information, contact:
Frank Juan at (865) 576-8540
or visit the Weldon Spring website at <http://www.em.doe.gov/wssrap/>.

Oak Ridge continued from page 5

Ridge have been completed. Long-term institutional controls will include the construction of a cover that will prevent direct exposure to the waste and minimize the infiltration of water. Physical barriers will also be used to prevent future public access to the facility.

Bechtel Jacobs Company LLC has awarded to Waste Management Federal Services a $35.6 million subcontract for the design, construction, and operation of the disposal cell, following completion of the required congressional review period for the privatization report developed for the project.

For more information, contact:
Frank Juan at (865) 576-8540, or via e-mail at <juanfc@oro.doe.gov>.

New Website Aids Search for Scientific Data

Be sure to check out the new website developed by DOE's Office of Scientific and Technical Information (OSTI). PubSCIENCE, located on the web at <http://www.osti.gov/pubsci>, contains hundreds of peer-reviewed journal literature in the physical sciences and other energy-related disciplines. OSTI has partnered with more than twenty publishers to provide this powerful search engine which provides users with free information with a few mouse clicks. Since it was launched October 1, 1999, PubSCIENCE has become one of DOE's most popular websites. The site will continue to expand its current collection to become a comprehensive compendium of searchable, published information about the physical sciences and other disciplines of concern to DOE. To date, publishers issuing over 1,000 separate journal titles have agreed to participate in PubSCIENCE. Citations for these titles are being added as they are provided.

For more information, visit the PubSCIENCE website at <www.osti.gov/pubsci>.

National Nuclear Security Administration Begins Operations

The newly created National Nuclear Security Administration (NNSA) formally began operating on March 1, 2000. As part of the $288.9 billion Defense Authorization Bill passed last September, the NNSA was created to respond to significant security challenges at the Department of Energy's (DOE) nuclear weapons laboratories and production/test facilities. Its mission is to carry out the national security responsibilities of the DOE, including maintenance of a safe, secure, and reliable stockpile of nuclear weapons and associated materials capabilities and technologies; promotion of international nuclear safety and nonproliferation; and administration and management of the naval nuclear propulsion program. In a memo sent to all DOE employees, Secretary Richardson stated that he is "optimistic that the steps we have taken will enable NNSA to bring clearer focus to the Department's national security functions while maintaining a vigorous and critical collaboration among all of the Department's programs for our nation."

For more information, visit the new NNSA website at <www.nnsa.doe.gov>.

Coming Soon in *EM Progress*

Site Working Conditions
The health and safety of workers, the public, and the environment is the number one principle governing EM's activities and plans. (See "Six Principles," page 8.) In the next issue of *EM Progress*, we will take a look at site working conditions and what is being done to ensure the protection of worker health and safety.

Paducah Update
Independent investigations of the Paducah Gaseous Diffusion Plant have revealed a lack of compliance with DOE orders and regulations on worker safety. To fast-track solutions, Secretary Richardson has doubled Paducah's budget to $109.2 million. Find out what DOE is doing to ensure that cleanup, waste management, and worker health issues are being addressed at the Paducah site.

Technological Advances
We'll also take a look at some of the innovative cleanup technologies sites are using to shave years off remediation schedules and save millions—if not billions—of dollars.

Database continued from page 7

- Waste disposition plans and waste transfers.

DOE is not required to update the CID on more than an annual basis and will not collect new information. Rather, the information is supplied from DOE's existing national level information management systems, including the:

- EM corporate database (including data on spent nuclear fuel from the national spent nuclear fuel database);
- Facilities Information Management System;
- Waste Generation Report (Pollution Prevention database);
- Toxic Chemical Release Inventory; and
- Materials in Inventory database.

Three types of reports are available in the CID to view and access information:

- 11 "ready-to-read" reports provide summary, information on a site or national level
- Over 50 "standard" reports enable users to query and filter data based on key criteria and output the data using pre-defined report formats.
- An "ad hoc" query capability that allows more advanced users to build custom queries and access the entire database.

The CID also features an on-line glossary, background information, interactive help, and keyword searches, as well as links to other DOE and related web sites. A help desk is also available for user assistance.

CID reporting features will continue to be refined based on feedback from web site users. A second National Stakeholder Forum is planned for FY2001 that will solicit further comments and suggestions from stakeholder and plaintiff representatives.

The CID can be accessed through the Internet at: <http://cid.em.doe.gov>.

Credits

EM Progress is published quarterly. To learn more about the newsletter, or how to submit an article, please contact the managing editor at the phone number listed below.

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EM PROGRESS

RECLAIMING THE PAST TO SECURE THE FUTURE

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 8 • Number 1 Winter 1999

Uranium Mill Tailings Remedial Action Cleanup Completed

It started two decades ago, and after years of research, technology development, program extensions, and remediation, the U.S. Department of Energy's (DOE) Uranium Mill Tailings Remedial Action (UMTRA) Surface Project has been completed. After remediating 22 UMTRA processing sites, team members can look back with pride on 20 years of award-winning remediation work making UMTRA DOE's oldest and most successful environmental restoration project.

"[A recent UMTRA closing] ceremony mark[ed] the completion of one of the world's largest and most comprehensive efforts to clean up the environment," said George Rael, Albuquerque Operations Office Environmental Restoration Division Director. "It also mark[ed] the culmination of 20 years of effort on the part of a large number of dedicated individuals."

According to Dick Campbell, the first DOE project manager, "The seeds for the UMTRA Project were planted in the early 1970s when concern began to grow over the health hazards posed by mill tailings left from the production of uranium for the U.S. government. Attention to the perceived problem was first directed to the thousands of vicinity properties in the Grand Junction area, but the focus soon broadened to privately owned mill sites that had provided uranium in the 1950s for the U.S. weapons programs."

More than four million cubic yards of uranium mill tailings were remediated by DOE's UMTRA project. Here, workers add to the pile.

UMTRA continued on page 8

Hanford's C Reactor "Cocooned"

With the exposed face of a former plutonium production reactor towering in the background, U.S. Secretary of Energy Bill Richardson declared victory in the Department of Energy's (DOE) push to find a cheaper, more efficient way to minimize reactor risks.

The Hanford Site C Reactor, which supplied plutonium for the U.S. nuclear arsenal, is the first DOE reactor to be completely encased, or cocooned, to protect workers and the environment while its radioactivity safely decays for up to 75 years.

"The stunning success of this project demonstrates the Department's ability to deal decisively with the vexing challenge of safely decommissioning our contaminated and aging facilities," said Energy Secretary Bill Richardson, who spoke at a ceremony. "Combining proven techniques with innovative technologies, we have shown that there is a safer, far less expensive way to achieve this important goal. While I am

Hanford continued on page 2

In This Issue...

The Managing Editor Speaks Out on Environmental Justice 3

Fernald's Landscape Changes for the Better 5

SRS Cleanup Success.....9

DOE's Excess Property Is Given to Charity.....10

Get *EM Progress* Electronically 12

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Hanford continued from page 1

delighted to be here personally to mark this important step forward, we must remember that Hanford still represents one of the nation's most significant environmental challenges. Clearly, much more needs to be done to protect the region's water resources and the people who depend upon them," said Secretary Richardson.

A 1992 Environmental Impact Statement and 1993 Record of Decision called for dismantling eight of Hanford's nine defunct reactors—with their estimated 12,000 ton cores to be loaded onto massive "crawler" vehicles and moved about 15 miles to a disposal site on Hanford's central plateau. This expensive and complicated undertaking was further examined, and eventually a new idea came to take its place. The new concept of encasing the reactor cores and temporarily storing them on site, pending their permanent disposal, was undertaken, and now C Reactor has been safely cocooned.

The cocooned C Reactor after completion.

Cocooning the reactors will provide up to 75 years of interim safe storage. Enclosing the structures and letting the radioactivity decay dramatically reduces the money required for building maintenance, avoids disturbing uncontaminated Hanford site land, and protects workers and the environment from the removal of a still-radioactive core.

C Reactor's core is now protected by three- to five-feet-thick shielding walls and a new high-strength, corrosion-resistant, galvanized steel roof. Twenty-three of the 24 reactor site buildings have been removed, and the one remaining building has been reduced by 80 percent. During the decontamination and demolition of the reactor complex, employees carefully removed contaminated wastes that included 70 tons of lead, 1,000 tons of steel, 12,000 tons of concrete, and 1,700 tons of soil. A total of 15,600 tons of low level waste were sent to Hanford's environmental restoration disposal facility, and 215,000 gallons of contaminated water was transported to the site's effluent treatment facility. The project was able to recycle approximately 400 tons of steel, 2.5 tons of copper, 40 tons of lead, and one gallon of mercury.

"The physical transformation of this area is awesome," said former Hanford Site Manager John Wagoner. "The Hanford skyline has been forever changed—and will change even more based on the success of this project."

For more information, contact
Colleen C. Clark at (509) 373-5985.

Safe Shutdown and Title Transfer

"Fernald has developed a reputation as a leader in environmental restoration," said U.S. Secretary of Energy Bill Richardson in his speech at a March celebration for the completion of Fernald's Safe Shutdown. This major project was finished two years ahead of schedule, and $7 million below budget; it was also the first Safe Shutdown achieved within the entire Department of Energy (DOE) complex for a major facility under a CERCLA action. Safe shutdown is the stabilization of facilities prior to potential reuse or dismantlement. Secretary Richardson added that he was "delighted to be the first Secretary of Energy to have ever visited Fernald."

Secretary Richardson then traveled to Mound to present a $5 million dollar check to the Miamisburg Mound Community Improvement Corporation (MMCIC) at an event marking the transfer of the title of the first parcel of Mound property to the MMCIC. The money will be used to add landscaping, more parking spaces, and access to public utilities to attract private businesses to the industrial park.

Both the completion of Fernald's Safe Shutdown and the presentation of the $5 million check to the MMCIC demonstrate DOE's commitment to successfully cleaning up remnants of the Cold War era while recognizing and giving back to the surrounding communities.

For more information, contact
Gary D. Stegner at (513) 648-3153.

Secretary Richardson meets with hazardous waste workers at the Plant 1 Pad in Fernald prior to the Safe Shutdown Ceremony.

Environmental Justice and Public Participation Through Technology

By Melinda Downing
Acting Deputy Director
Office of Intergovernmental and Public Accountability

The Environmental Protection Agency defines environmental justice as the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, culture, income, or education level in the development, implementation, and enforcement of environmental laws, regulations, and policies. The definition further states that no population should suffer a disproportionate share of environmental burdens. In the Department of Energy's (DOE) Office of Intergovernmental and Public Accountability (EM-22), we have attempted to focus attention on including every person in meaningful environmental decision-making involvement. If all people have meaningful participation in a process where they understand both the substance and the procedure, no population should suffer a disproportionate impact.

From the Desk of the Managing Editor

Public participation is not easy. DOE and other federal agencies have historically used advisory boards to assist in decision-making. Site-specific advisory boards and community advisory boards are often used to review specific proposals and provide advice. Citizens are asked to review proposed actions and, in some cases, make recommendations that are adopted by the decision-making body. Serving on advisory boards can be time-consuming, and it can require the average citizen to understand technical and often complex matters. It can also be a challenge for citizens to attend meetings following a hard day's work. These citizens are asked to serve without compensation.

One way to make public participation easier and more meaningful is through electronic access. Citizens who can read agency proposals in the comfort of their own homes, offices, or community centers and respond to the proposals from the same location, are more likely to participate than those who must go to meetings and participate in discussions. Similarly, citizens who can sit at a computer terminal will probably find it easier to get answers to technical and complex questions. These are some issues we intend to consider through a capacity-building project we are conducting in partnership with the Howard University Department of Engineering, Architecture, and Computer Sciences; National Urban Internet; and Howard University Urban Environment Institute, Howard University Continuing Education.

Justice continued on page 4

Prichard Goes Digital

"We always suspected we were doing a good job. Now we know." The thing that gives Prichard, Alabama Mayor Jesse Norwood such confidence is something most cities outgrew around 1996—a 486 computer. Due to a cooperative agreement with the U.S. Department of Energy's (DOE) Environmental Management (EM) program and Howard University's Urban Environment Institute, Prichard, Alabama has received six computers and is still counting. "Once we got the word out about DOE's computer donation, computers started coming out of the woodwork. I told the DOE story to top executives at Alabama Power, and they've donated 30 computers to Alabama mayors all over the state," said Norwood.

Mayor Norwood shows off his new computer to DOE's Melinda Downing.

By using computers in six city offices, Prichard is now able to stay connected.

Roughly 35,000 people live in Prichard, Alabama, and more than 40% of these people are below the poverty line. In close proximity to Gulf Coast beaches, state parks, and other tourist attractions, Prichard should benefit from the tourist industry. However, while tourism provides much of southern Alabama's income, Prichard does not share in the wealth.

Prichard suffers from widespread housing problems, incomes far below the poverty level, high unemployment and underemployment, flooding, and poor sanitation drainage systems. City officials attribute Prichard's economic woes in large measure to deindustrialization and economic migration during the past 30 years. DOE is interested in this small Alabama town for the very reason tourists and industry are not—the environmental injustices affecting it.

These environmental issues have, over time, helped to create a city rich in commitment yet poor in resources. Before

Prichard continued on page 11

Justice continued from page 3

The process for this environmental justice/public participation project is straightforward. It is accomplished through the following steps:

1. Create community technology centers that connect community groups to all aspects of DOE and the vast array of environmental information available on the World Wide Web.
2. Conduct training workshops that consist of computer-based research, Internet research, geographic information systems, risk assessment, and other subject matters.
3. Provide continuous technical assistance for historically black colleges and universities and other sources both in person and through e-mail.

These three steps can turn apathy and anger into informed participation. Environmental justice and public participation are about helping those impacted by decisions to have meaningful participation in the process that leads to the decision. Through community technology centers, community groups can get instant access to such information.

During 1998, the DOE/Howard University partnership donated approximately fifty computers to various groups around the country. The computers were donated to small towns (see "Prichard Goes Digital" on page 3), local organizations for children's programs, and community groups to establish technology centers.

Through our capacity-building partnership, we will help community groups design and implement systems that provide information critical to everyday living. Training programs include basic computer skills, Internet research, toxic release inventory data, chemical impact analysis, risk assessments using geographic information systems for community decision-making, and e-mail as a tool to communicate with decision-makers.

Technical assistance is provided by environmental professionals from around the country. In all respects, the intent of this effort is to give community groups additional tools to help build capacity for more effective participation in community decision making.

For more information, please contact the Center for Environmental Management Information at (800) 736-3282, or (202) 736-3282 in Washington, DC.

DOE Donates Computers to Promote Public Participation

Our capacity building partnership has provided computers to the following groups:

- Highland Additions Community Center, Washington, DC
- Frederick Douglass Dwellings, Washington, DC
- Palmer Road Youth Center, Prince George's County, Maryland
- Center for Environmental Justice, Savannah, Georgia
- Hyde Park/Aragon Park Improvement Committee, Augusta, Georgia
- Hayti Heights Boys and Girls Club, Hayti Heights, Missouri
- East St. Louis Youth Center, East St. Louis, Illinois
- East St. Louis Computer Learning Center, East St. Louis, Illinois
- Martin Luther King, Jr. Youth Center, Glen Arden, Maryland
- Alexandria Public Housing Authority, Alexandria, Virginia
- Fairfax County Community Learning Center, Fairfax County, Virginia
- Oak Ridge Citizens Association, Oak Ridge, Tennessee
- Alexandria Redevelopment and Housing Authority, Alexandria, Virginia
- Bucknell Elementary School, Alexandria, Virginia

Program Integration Is Restructured; Field Participation Emphasized

Sharing ideas and accomplishments across program areas and sites offers the potential for solving problems. This notion of integration was discussed last summer when Environmental Management's (EM) Integration Team held a series of "round-robin" meetings at the Idaho National Engineering and Environmental Laboratory, the Savannah River Site, the Oak Ridge Reservation, the Rocky Flats Environmental Technology Site, and the Hanford Site. There was enthusiastic agreement that to reach its full potential, EM's program integration needed to be guided by strong field ownership and participation.

This idea became a reality during the September 1998 DOE headquarters workshops. Opportunities for integration may span virtually all components of the EM program. Current examples include cost-effective locations for storing high-level waste; transporting materials, waste, and spent fuel; and sharing treatment technology and facilities. The teams are also beginning to address a broad spectrum of other areas as well (please see box on page six).

"This effort is about taking creative ideas and moving things forward—it's about cooperation and taking a corporate perspective," said Acting Assistant Secretary

Integration continued on page 6

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Landscape Changing at Fernald

If you haven't visited the Fernald site recently, you might not recognize it. In November the employees in the Facilities Closure and Demolition Project Division completed demolition of another former production building, bringing the total of structures demolished to 53.

The landscape changes at Fernald.

Plant 7 was the first of approximately 200 buildings to be demolished at Fernald. The most recent was Plant 9, the former Special Products Plant, which was pulled to the ground in November. "What's really impressive is that we're able to demolish major complexes while still making progress removing smaller structures and moving forward with safe shutdown," said John Trygier, the DOE-Fernald team leader responsible for overseeing decontamination and dismantlement activities at the site. "The fact that we've been able to implement this aggressive schedule safely is good for the site. The work we're doing clears the way for the on-site disposal facility and soil remediation activities."

According to Trygier, putting together comprehensive contract packages enables work to progress more smoothly in the field. "Every time we do this we get a little smarter about it," he said.

"We have it to a point now where we know ahead of time exactly what information the contractor is going to need from us, and they know what they're expected to do. This kind of efficiency saves us time and money."

The next major complex set for demolition is the Maintenance Tank Farm Complex, which contains 11 structures. All decontamination and dismantlement activities at the site on schedule to be complete in 2005.

For more information, contact Gary D. Stegner at (513) 648-3153.

In 1994 Plant 7 was the first building at Fernald to be demolished. Since that time, 32 additional buildings have been dismantled, the most recent of which was Plant 9.

Get Involved—Electronically

Log onto the **Stakeholder Input–EM Budget Process** homepage to learn about EM's budget requirements, outlook, and comment directly to headquarters and site offices. Check out <http://www.em.doe.gov/stake/budget> and get involved!

Bulk Tritium Leaves Mound

As of September 1998, the Mound facility in Miamisburg, Ohio, is now rid of all of its accountable bulk tritium. Mound was built in the 1940s to produce components for nuclear weapons using radioactive tritium, and it is now one of DOE's cleanup sites. Removal of the bulk tritium is instrumental in the completion of the Mound cleanup, and for this dedication, Secretary of Energy Bill Richardson sent his congratulations: "This kind of progress shows how the Department is meeting its commitments for a cleaner environment."

Leah Dever, Manager of the DOE Ohio Field Office, stated that, "We have reduced a risk to the community, and it was a job well done. It clears the way so we can dismantle and decontaminate facilities so they can be used for peaceful purposes." As buildings are cleaned, they will be transitioned to the Miamisburg community through the Miamisburg Mound Community Improvement Corporation for economic development.

For more information, contact Jane Greenwalt at (937) 865-3116.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Innovative Reuse Contract Saves Thousands

Even radioactively contaminated empty drums can be put to good use in Oak Ridge and Portsmouth. By finding innovative and efficient ways to reuse contaminated drums, the Department of Energy (DOE) saved about $475,000. In addition, reuse prevents unnecessary contamination and disposal of clean drums, saves the cost of purchasing new drums, and saves the cost of dispositioning contaminated drums. This type of contract is now available for other sites.

The East Tennessee Technology Park (ETTP) in Oak Ridge and the Portsmouth Gaseous Diffusion Plant have considerable inventories of 55-gallon drums that are radioactively contaminated. Many of the contaminated drums are also contaminated with materials that are regulated by the Toxic Substances Control Act and the Resource Conservation and Recovery Act. The historical options for these drums have been either to reuse them on site or dispose of them as low-level waste, both of which are costly. The National Program for Metals Recycle has developed an alternative approach that will dispose of the radioactive drums at no cost to the government.

A request for proposal was issued for the sale of the drums. The drums were then sold to U.S. Ecology for $1. U.S. Ecology will pay for the transportation of the drums to its licensed site where it operates a super compactor for packaging low-level waste. The super compactor operation requires 55-gallon drums to contain the final waste package, and the drums from Oak Ridge and Portsmouth may be used as these low-level waste containers.

The contract currently includes 13,300 drums from ETTP, up to 2,300 drums from Portsmouth, and 100 drums from Hanford. The initial sale was completed May 28, 1998, and deliveries were initiated on June 29, 1998.

The National Program will continue to develop this contract and include other sites that will be able to contribute additional drums. The National Program is available for technical or policy assistance for any sites wishing to pursue innovative metal recycle projects.

For more information, contact Marvin Bennett at (423) 576-0853 or <bennettme@oro.doe.gov>.

Integration continued from page 4

Jim Owendoff speaking at the September headquarters workshop. In his remarks to the group, Owendoff stressed that line managers should provide the necessary commitment and support to "get on with it and open doors."

In response to the summer round-robin meetings, the integration effort was restructured under the leadership of an Integration Executive Committee, composed of the field office managers from Richland, Idaho, Oak Ridge, Rocky Flats, and Savannah River—the five largest EM sites.

Twelve Program Area Integration Teams (PAITs) were formed to identify and evaluate integration opportunities. Once identified, the PAITs will then present their recommendations to the Executive Committee for action. PAIT leaders will coordinate with affected organizations and seek stakeholder input.

The PAITs and the Executive Committee will be supported by an Integration Core Team. The Core Team is composed of EM deputy assistant secretaries, field office assistant managers for EM, and other staff. The Core Team will ensure that PAITs follow a common systems engineering approach with flexibility on specific tasks and ensure that products are ready for decisions by the Executive Committee.

For additional information, contact Steve Schneider at (301) 903-7163 or Doug Tonkay at (301) 903-7212.

Program Area Integration Teams (PAIT)

- High-level Waste
- Transuranic Transportation & Disposal
- Transuranic Storage & Treatment
- Mixed Low-level & Low-level Waste
- Environmental Restoration
- Deactivation
- Decontamination & Decommissioning
- Reindustrialization
- Spent Nuclear Fuel
- Transportation
- Science & Technology
- Plutonium & Nuclear Materials

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Trench 1 Cleanup Done; 30 Tons of Depleted Uranium Removed Safely

Trench 1 cleanup; 30 tons of depleted uranium has been removed.

Workers at Rocky Flats have completed the excavation of Trench 1, a former depleted uranium waste burial site and the largest and most complex environmental cleanup project to date at the Rocky Flats Environmental Technology Site. Beginning June 10, cleanup crews removed 170 drums containing some 30 tons of depleted uranium.

U.S. Department of Energy Secretary Bill Richardson hailed the cleanup of Trench 1 as "another clear demonstration that real progress is being made at Rocky Flats. This effort successfully cleaned up a very complex contamination site. Trench 1 was the single largest source of radioactive material in the environment at Rocky Flats and ranked fifth on the list of top-ten risk cleanup sites at Rocky Flats."

Protective clothing enables site employees to work efficiently and safely.

Richardson also praised the safety record of the Trench 1 project team, which completed more than 100,000 hours of work without a single injury or environmental concern.

Rocky Flats continued on page 8

Fernald Emphasizes Recycling and Reuse when Relocating Sewage Treatment Plant

Stakeholders recently recognized the Department of Energy (DOE) and Fluor Daniel Fernald for replacing Fernald's 47 year-old sewage treatment plant. Approximately 90 percent of the equipment for the sewage treatment plant came from facilities on site which were no longer in use. This reuse resulted in a tremendous cost savings.

The old sewage treatment plant frequently required significant maintenance service and was in the construction path of the on-site disposal facility. DOE and Fluor Daniel Fernald determined a new sewage treatment plant was needed to continue the necessary site sewage treatment service until the site's closure. Project engineers determined that the best location for the new sewage treatment plant was next to the advanced wastewater treatment facility. This placement would allow operations to be centralized.

In order to reduce costs, project engineers and designers sought to use existing equipment whenever possible. "We needed a sewage treatment plant but didn't want to spend a lot of money on a facility that would be torn down in a few years," said Dennis Carr, Fluor Daniel Fernald Vice President of

Reuse continued on page 10

Fernald's Biodentrification Effluent System was installed in 1989 and shut down in late 1994. It was recently relocated and reconfigured as a new site-extended aerator sewage treatment system.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Rocky Flats continued from page 7

"To have performed such complex and physically challenging work without a single injury is something that this whole team is extremely proud of," said Rocky Mountain Remediation Services Project Manager Wayne Sproles. "The workers are to be commended for their commitment to safety and the environment. Our planning, preparation, and extensive focus on hazard analysis has really paid off."

The Trench 1 excavation site was originally sampled to ensure that no contaminants of concern remained in the excavation site. The site area was fully excavated and remediated in September of 1998. During backfilling operations in the trench in December 1998, a five gallon container was uncovered in the trench but outside the original excavation area. A geophysical survey was then conducted in the immediate perimeter of the trench. The known container was found to be contaminated and was removed. That geophysical survey detected two other anomalies similar to the container, which were then uncovered and were found not to be hazardous.

Trench 1 was used as a burial site for depleted uranium waste and other waste from 1954 to 1962.

For more information, contact Jennifer Thompson at (303) 966-6285.

UMTRA continued from page 1

In 1972 a congressional subcommittee conducted hearings to look at a possible cleanup program for Salt Lake City, Utah. After a close look at this particular community, the committee authorized a comprehensive study of all potential cleanup sites instead of undertaking piecemeal solutions. Preliminary engineering evaluations of the sites were conducted during 1975, and by 1977, it was concluded that a cleanup program was needed to alleviate potential health hazards from the former processing sites.

All 22 UMTRA processing sites were remediated as of September 1998.

In 1978 Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA) and established the program's timeline and funding formula. Under the terms of the program, DOE paid for 90 percent of the cleanup costs, or approximately $1.4 billion. Each state paid for 10 percent of its own cleanup activities, with a total state contribution of approximately $100 million. The DOE paid 100 percent of the costs incurred with the cleanup on tribal lands.

UMTRCA also required that DOE keep stakeholders informed of UMTRA Project plans and activities, and involve them in key aspects of the decision-making process. While DOE has placed increased emphasis on stakeholder involvement in recent years, the UMTRA Project encouraged stakeholder participation from the beginning. Stakeholders including cooperating organizations such as the U.S. Environmental Protection Agency; U.S. Nuclear Regulatory Commission; Federal agencies; local, state, and national officials; citizen advisory boards; and individual citizens in UMTRA Project communities joined together to form a partnership.

Remedial action began at the first UMTRA site in Canonsburg, Pennsylvania, in 1983, and since that time, the UMTRA Project has accomplished the following: the stabilization of more than 39 million cubic yards of tailings from 22 former processing sites; the cleanup of more than 5,300 vicinity properties; and 22 million truck miles driven without a job-related fatality, coupled with an injury rate 70 percent below the national construction rate.

By September 30, 1998, all 22 UMTRA processing sites were remediated, and 16 of 18 disposal cells were licensed by the Nuclear Regulatory Commission. During fiscal year 1999, the final two disposal cells will be licensed and project closeout activities such as records archiving and contract termination will be completed. The 19th disposal cell at Grand Junction, Colorado, will remain open for up to 25 years to accept vicinity property material managed by the states and Tribes.

The sites originally earmarked for cleanup included: Canonsburg, Pennsylvania; Salt Lake City, Green River, and Mexican Hat, Utah; Durango, Gunnison, Grand Junction, Rifle (two sites), Naturita, Slick Rock (two sites), and Maybell, Colorado; and Riverton and Spook, Wyoming. Also included were Lakeview, Oregon; Shiprock and Ambrosia Lake, New Mexico; Falls City, Texas; Tuba City and Monument Valley, Arizona; and Lowman, Idaho.

For more information, contact Frank Bosiljevac at (505) 845-5683.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

First WIPP Shipment Arrives Safely

On March 22,1999, U.S. District Judge John Garrett Penn ruled that "the court injunction entered in 1992 does not prevent shipment of TA-55-43, Lot No. 01 waste to WIPP [Waste Isolation Pilot Plant]." The court concluded that this waste, which resides in temporary storage at Los Alamos National Laboratory (LANL), "is not hazardous under RCRA [Resource Conservation and Recovery Act], so... DOE [U.S. Department of Energy] may make the shipment."

DOE immediately sent notification letters to states, tribes, and the Environmental Protection Agency (EPA) to inform them of its intent to ship transuranic radioactive (TRU) waste from LANL to WIPP, the Department's key facility for permanently disposing of TRU.

The first of an estimated 17 shipments of TRU waste arrived safely at WIPP, located near Carlsbad, NM, at approximately 4:00 AM (MST) on Friday, March 26, 1999. Despite the early hour,

WIPP continued on page 10

A/M Area Surpasses Three Billion Gallon Cleanup Mark at SRS

"If this was your favorite 20-ounce bottled soft drink, you would have enough bottled drinks to wrap around the globe 640 times," said Jerry Turknett, A/M Area project team lead. That is three billion gallons of water, to be exact, and that is how much groundwater was recently treated at the Savannah River Site's A/M Area.

The A/M Area houses laboratories, administration buildings, and facilities where fuel target assemblies were manufactured and degreased with chlorinated industrial solvents. During the early days of site operations, the practice of putting chlorinated industrial solvents into earthen basins was considered acceptable. However, it is deemed unsatisfactory by today's environmental standards.

Commonly treated solvents are volatile organic compounds which contain carbon, hydrogen, oxygen, chlorine, and other elements. They are called volatile because they evaporate quickly.

The primary A/M Area groundwater treatment technology employed is air stripping, commonly referred to as pump and treat. Air stripping works by pumping contaminated groundwater to the surface and up to the top of a 70-foot vertical column. Then, as the water cascades downward, air that has been forced upward through the column mixes with the water, causing the water's contaminants to turn from liquid to vapor. As upward flowing air strips the vapor contaminant and transports it to an off-gas treatment unit, the cleaned water continues to flow downward and is piped to a regulated outfall.

Basic air stripping technology is not the final solution to remediating the A/M Area's contaminated groundwater. Environmental restoration officials are constantly looking for more efficient cleanup methods.

The most recently deployed groundwater treatment technology that will boost A/M Area remediation is the southern sector recirculation wells. These wells treat water underground and release it without ever pumping it to the earth's surface.

Treating groundwater at Savannah River Site's A/M Area.

Continuous deployment of modern technologies like these is critical to successful SRS groundwater cleanup. The site strives to identify and deploy new technologies by sharing experience and data with similar programs worldwide.

For more information, contact Mary Jamison at (803) 725-0626 or <mary.jamison@srs.gov>.

PUBLIC SERVICE... PUBLIC SERVICE... PUBLIC SERVICE

Excess Property Donation Program

From technical equipment to office furniture, the Department of Energy (DOE) is finding ways to stop creating waste. Since January 1, 1998, the DOE Ohio Field Office, located at the Mound Facility in Miamisburg, Ohio, has distributed excess computers, technical equipment, and furniture to local non-profit organizations, government, and schools. So far this year, donations valued around $250,000 have been given.

In an unusual contribution, a fire suppression system from a Mound building that was to be demolished was made available to Sinclair Community College in Dayton. The system will be used as an instructional model at the college's new Fire Science School.

In the local community, the Miamisburg Police Department's DARE Program, a program to fight youth drug abuse, was in need of office furniture. DOE Ohio donated eight file cabinets and two desks to the program. "We didn't have the money to buy the equipment, so it was nice to be able to get the stuff we needed from DOE," said Tony Beran, Community Relations Officer for the Miamisburg Police Department. "This will help our program a lot."

Excess computers are headed to a local school district for the classroom.

Through the excess property donation program, many schools, local governments, and non-profit organizations will be able to make valuable use of equipment no longer needed by the Department.

For more information, contact
Jane Greenwalt at (937) 865-3116 or
Mark Becker at (937) 865-4450.

WIPP continued from page 9

hundreds of people were on hand to watch this important milestone in DOE's work to permanently dispose of defense-generated transuranic waste left from the research and production of nuclear weapons.

Previously there had been some question about WIPP's legal ability to accept the LANL waste shipment because it was unclear whether the waste was non-mixed transuranic waste—the only type of waste WIPP may currently dispose of at its facility.

The New Mexico Environment Department recently determined that the 116 drums of LANL waste were accurately characterized as non-mixed transuranic waste and may be disposed of at WIPP prior to issuance of the Resource Conservation and Recover Act (RCRA) permit. DOE does not currently plan to begin shipments of mixed waste until the New Mexico Environment Department issues the RCRA permit.

For more information, contact
Dennis Hurtt at (505) 234-7327

Reuse continued from page 7

Fernald's Soil and Water Project. "In an effort to make use of all available resources the Biodentrification Effluent Treatment System (BETS) was the most obvious place to begin."

The BETS was installed in 1989 and shut down in late 1994, when it was relocated and reconfigured. "All in all, the majority of material and equipment that went into the new sewage treatment plant was either used or recycled," said Carr.

The existing BETS equipment included two 100,000-gallon aeration tanks, two 26,000-gallon clarifier tanks, two 8,000-gallon sludge thickener tanks, a 3,000-gallon effluent pumping tank, two air-powered diaphragm sludge pumps, an automatic composite effluent sampler, and a system control panel.

Additionally, the existing ultraviolet disinfection units and control panels at the old sewage treatment plant were relocated to the new facility. Existing centrifugal blowers, previously purchased for a discontinued production plant project, were installed to replace the original blowers. An existing guard building was relocated for an operator work station, and other miscellaneous existing equipment including a magnetic flowmeter, valves, power panels and switches were also incorporated.

For more information, contact
Gary D. Stegner at (513) 648-3155.

PUBLIC SERVICE... PUBLIC SERVICE... PUBLIC SERVICE

Fernald Recycling Boosts Cleanup, Saves Thousands

What started out as a small recycling project by a few employees at the Fernald Environmental Management Project in the early 1990s has saved thousands of dollars, generated revenue for the site and community, and diverted thousands of pounds of materials destined for costly disposal to reuse.

Over the past few years, DOE and its cleanup contractor, Fluor Daniel Fernald, have donated or sold over 400,000 pounds of non-hazardous chemicals no longer used at Fernald; established contacts to provide scrap metals decontamination and recycling services; diverted thousands of pounds of materials—such as packaging and laundry bags—to reuse; and developed partnerships with local schools and organizations to recycle or reuse office materials and beverage cans.

"Through some creative ideas by our employees, we have decreased our disposal costs, reduced materials which would have been declared waste and sent the material either to an off-site disposal facility or to Fernald's on-site waste disposal facility, and provided a source of revenue to local schools and community groups," said Jack Craig, DOE Fernald Office Director.

In 1997 the DOE Ohio Field Office designated Fernald as the lead coordination office for pollution prevention and waste minimization efforts for the five project office sites. Over the last two years, Fernald has received funding from the DOE Office of Pollution Prevention to sponsor special waste minimization projects which benefit sites throughout the DOE-Ohio complex. Pete Yerace, DOE-Fernald waste minimization coordinator, said that one project would develop a user's guide to help sites like Fernald identify and deploy waste minimization and recycling initiatives into environmental restoration and decontamination and dismantling (D&D) projects.

By the end of August, Fernald shipped 95.5 tons of shredded copper to Alaron Corp. based in Wampum, PA, to process for free release and recycle. Most of the CU came from electric motor windings recovered from DOE's Gaseous Diffusion Plant.

"Our challenge was to come up with a practical tool that project managers would use to evaluate opportunities where waste minimization and recycling could benefit their project," Yerace said. The guide contains worksheets and step-by-step instructions on how to deploy recycling or waste minimization techniques during various stages of a restoration or D&D project. The user's guide is available on the Internet at <http://apollo.osti.gov/p2wmin/home.html>.

For more information, contact Gary D. Stegner at (513) 648-3153.

Prichard continued from page 3

the DOE donation, Prichard's City Planning Department had only two computers and one printer. The Department of Community Affairs had a vintage 1968 typewriter on which it hammered out the National Brownfields Showcase Proposal which gives aid to Brownfields sites once home to industries such as dry cleaners, factories, or body shops. These sites are now in need of cleaning and redevelopment.

In May of 1997, DOE delivered six computers to Prichard with the help of DOE's Acting Deputy Director of Intergovernmental and Public Accountability, Melinda Downing. They were installed in key city offices in an effort to connect Prichard's resources. The computers have allowed the city to network its services, respond to public concerns, and complete and implement a geographic information system. "Now the workload is so simple," said Mayor Norwood, whose office received two of the computers. "We can generate daily reports on a database to tell us who's constantly complaining and how they're getting help. We're able to do a heck of a lot more than we were ever able to do before—and get it done in less time."

"This donation has added so much to the community, and DOE is very proud to have a hand in that," said Downing.

For more information, contact the Center for Environmental Management Information at (800) 736-3282, or (202) 736-3282 in Washington, DC.

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A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

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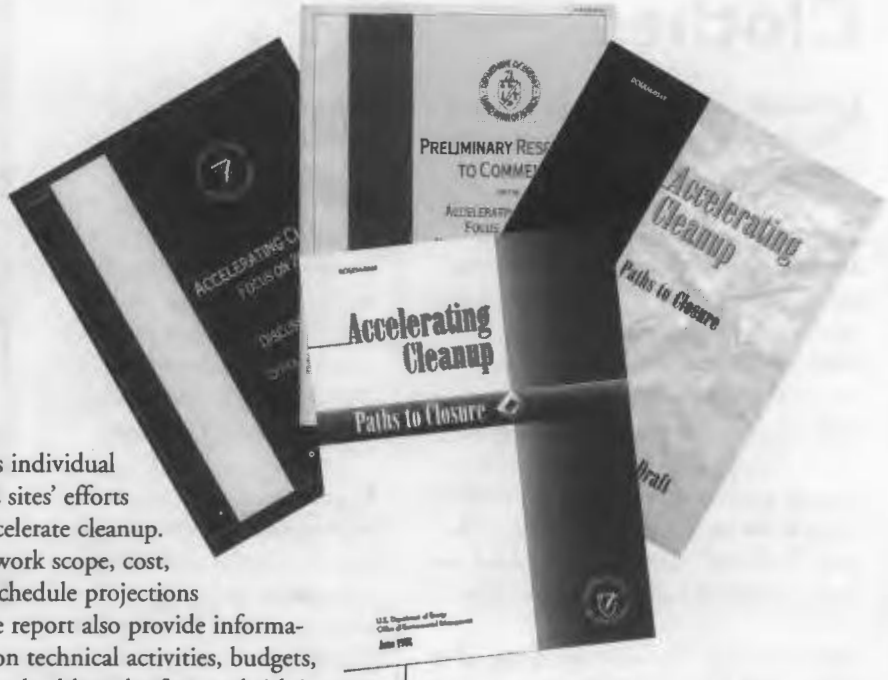
Accelerating Cleanup Crosses the Finish Line



The final report, Accelerating Cleanup: Paths to Closure (bottom center), was released June 30, 1998, and is the culmination of previous draft strategy revisions. The report explains DOE's goal to clean up its legacy from weapons production.

A year after its initial introduction to the public, the Department of Energy (DOE) released the national *Accelerating Cleanup: Paths to Closure* report on June 30, 1998. This report defines the scope, schedule, and cost for cleanup of the nation's nuclear weapons complex. The report, to be updated annually, details the 353 cleanup projects at 53 geographic sites in 22 states across the nation.

The report released on June 30, 1998, builds on the release of the discussion draft (June 1997) and the draft report (February 1998), each of which solicited feedback from stakeholders, regulators, and Tribal nations. "Consistent with the Administration's initiative to make government work better, *Paths to Closure* focuses on finding ways to complete our cleanup work as quickly and efficiently as possible without compromising our commitment to maintain federal and state cleanup compliance standards or the health and safety of our workers. Securing sufficient resources to achieve our commitments will remain a challenge," said former Secretary of Energy Federico Peña.

Paths to Closure provides information to better plan and manage the world's largest environmental cleanup program and tracks individual DOE sites' efforts to accelerate cleanup. The work scope, cost, and schedule projections in the report also provide information on technical activities, budgets, worker health and safety, and risk in order to inform regulators, state and local officials, stakeholders, Tribal nations, and others of the cleanup progress.

"Meeting the cleanup challenge requires an enduring national commitment. The environmental cleanup of our nation's nuclear weapons complex cannot be accomplished unless sufficient and consistent resources are available over the long term and unless the Department continually seeks efficient and cost-effective ways of doing business. As *Paths to Closure* demonstrates, a long-term stable budget at current levels enables the Department to accelerate the cleanup and closure of many of its sites," added former Secretary Peña.

The underlying assumptions and basic work scope, cost, and schedule data in *Paths to Closure* are the same as those used to develop the February draft. Given the

Paths to Closure, *continued on page 2*

In This Issue...

Most Vulnerable DOE Building Becomes Safer 3

Students Involved in Oak Ridge Clean Up Decisions 6

WIPP Info Center Offers Answers 7

New System Helps Monitor Hanford Groundwater 9

Rocky Flats: Free of Saltcrete for the First Time in a Decade 11

Printed with soy ink on recycled paper

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Cleaning Up Might Mean Changing Clothes

Standard safeguards like face respirators are usually used when entering contaminated rooms located at the Rocky Flats Environmental Technology Site. However, a group of these rooms has earned the title "infinity" rooms since the contamination levels are so high the rooms aren't safe to enter—even with a face respirator. With contamination levels up to more than 400 times the normal contamination limit, these rooms present quite a problem for Rocky Flats workers. However, recently workers decontaminated the first of 13 of the most dangerously contaminated "infinity" rooms, and two more are in the process of being decontaminated.

Most of these rooms were not designed to be occupied by people. They have only been used for short periods of time during equipment maintenance. The rooms became contaminated through past production practices, and equipment was operated by remote control. Since people never entered the rooms, the high contamination levels were never a great concern. However, since workers now have need to enter the infinity rooms, the extreme contamination levels must be brought down.

"Now that we are trying to clean up facilities and make the best possible use of available work space, the high levels of contamination must be brought down to protect the workers and increase useable space for site closure mission activities," explained Scott Sax, Building 371 Project Manager for Safe Sites of Colorado.

In order to do this, teams of workers must don several layers of protective clothing and equipment, including a full-body suit called PremAir Suits. Workers commonly refer to these suits as "bubble suits" or "Michelin Man suits." Whatever you call them, these suits provide workers with the highest level of protection from airborne contamination and have two different layers of respiratory protection. Workers also are equipped with two separate radiation monitoring devices to track their exposure.

Once suited up, teams of workers remove equipment and bags of waste, and then apply hot water with hydro lasers—similar to a super-intense car wash—to remove surface contamination. Since some contamination is too deeply embedded to wash off, it must be painted over with several layers of sealant paint. This helps to contain the contamination until it can be removed during building closure.

A Rocky Flats worker uses a PremAir Suit to keep him safe from the highly contaminated "infinity" room.

"Reducing the contamination levels in these areas reduces one of the highest potential risks for worker exposures at Rocky Flats," said Sax. "This is challenging work because of the high levels of contamination, the difficulty of working in cumbersome protective equipment, and the fact we are trying out new and different technologies. Our goal is to create a process in Building 371 that works so we can apply it to the rest of the site."

For more information, contact Jennifer Thompson at 303-966-6285.

Paths to Closure, *continued from page 1*

funding levels assumed in *Paths to Closure*, the life-cycle cost estimate for the Environmental Management program-wide cleanup is approximately $147 billion through 2070.

Copies of the report can be obtained from the Center for Environmental Management Information at 1-800-7EM-DATA. A full text version of *Accelerating Cleanup: Paths to Closure* is available on the World Wide Web at <http://www.em.doe.gov>.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Most Vulnerable DOE Building Becomes Safer

The most vulnerable nuclear building in the Department of Energy's (DOE) weapons complex has recently been made a much safer place. Workers at Rocky Flats have drained the last liters of dangerous plutonium solutions from the final high-level waste tank in Building 771. This draining eliminates the number one risk to Rocky Flats workers and addresses one of Building 771's major hazards.

Constructed in 1951, Building 771 was used as a plutonium recovery facility during the site's production days. In 1989, site nuclear operations were suspended, and plutonium and other nuclear materials were left in unsafe forms for long-term storage. Due to these safety problems, there was concern that over time, a plutonium spill could occur.

In November of 1994, DOE's Plutonium Working Group Report ranked Building 771 as the single most vulnerable facility in the DOE complex in terms of plutonium risk and how safely plutonium was stored.

Since then, all Building 771 uranium and plutonium solution tanks have been drained. More than 3,400 liters of solution have been drained from 23 tanks in Building 771. "The significant reduction of risks in Building 771 at Rocky Flats is a major accomplishment. I am pleased to be able to say that today this facility is a much safer place," said Colorado Lieutenant Governor Gail Schoettler.

"The progress in Building 771 represents Rocky Flats making good on its commitments to the Defense Nuclear Facilities Safety Board, the State of Colorado, Rocky Flats workers and the Rocky Flats community," said Kaiser-Hill President Bob Card. "This illustrates that when we all work together, true progress can be made."

Even with the removal of solutions, Building 771 still contains plutonium. It will remain a top risk-reduction priority until the plutonium is completely removed.

For more information, contact Jennifer Thompson at 303-966-6285.

Workers at Rocky Flats have drained the last liters of dangerous plutonium solutions from tanks in Building 771.

New Public Involvement at Fernald

A new public involvement forum, known as "Fernald Cleanup Progress Briefings," has been implemented at the Fernald Environmental Management Project (FEMP). The Cleanup Progress Briefings, which began in the fall of 1997, were created to update stakeholders on current Fernald remediation projects, preview upcoming activities, and address specific issues and stakeholder concerns. Since then, on the second Tuesday of each month, this tradition has continued.

For more information about future briefings, call Gary Stegner at 513-648-3153, or visit the "Stakeholders" section of Fernald's Web site at <www.fernald.gov>. You may also call Fernald's Community Access Line at 513-648-6272, which is accessible 24 hours a day, seven days a week.

Stakeholders discuss Fernald issues at the September '97 Cleanup Progress Briefing.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

ER Project Pulls Out the Barrels in 300 Area Cleanup

Bob McLeod, Department of Energy (DOE) Project Manager for Hanford 300 Area, thought he would be helping the kids hunt for eggs on Easter weekend. Instead, he wound up hunting for potentially unstable drums of depleted uranium at a Hanford 300 Area cleanup site.

Cleanup at the 117 acre site, located at the northern tip of the 300 Area, began July 7, 1997. Since then, more than 60,000 tons of contaminated materials and soils have been removed and disposed in Hanford's Environmental Restoration Disposal Facility.

"We expected surprises cleaning up the burial ground site," said Jeff James, Task Leader on the Bechtel Hanford Environmental Restoration Contract Team. "We knew we were working in a landfill, but unlike the local municipal landfill, the items disposed here were contaminated equipment and materials from nuclear fuel fabrication operations, including, among other things, three industrial kilns and a forklift!"

The initial discovery of the uranium barrels was made the Friday before Easter on March 13. "Finding the barrels wasn't a big surprise, because we had found other barrels at the site," said McLeod. "What was a little disconcerting were the calls from Jeff saying, 'We've found more. There is a second layer. There appears to be a third layer.' and not knowing exactly what was in the barrels."

By the time James' telephone calls ended, 350 barrels had been unearthed with an estimated 1,200 more remaining in the ground. With the help of some historical searches and conversations with former Hanford employees who worked in the 300 Area, it was determined the barrels contained uranium shavings submerged in oil. But after 40 years of burial, some of the barrels had deteriorated, causing the oil to leak out. Moreover, these drums were located just a few hundred yards away from the Columbia River. Project workers were most concerned about the depleted uranium shavings which can spontaneously ignite under certain conditions.

At Hanford's 300 Area 350 barrels were unearthed with an estimated 1,200 more remaining in the ground.

Working with the Environmental Protection Agency (EPA), Project Manager Dave Einan, McLeod, James, and their staffs began developing a drum stabilization plan. A plan was made and approved by DOE and regulators on Friday, April 10, and crews were mobilized Saturday. "Our main concerns were the barrels' temperature and possible friction of the uranium chips rubbing against each other," McLeod said. "The most critical moment was moving and stabilizing that first barrel, and doing so with as little motion as possible. Our confidence grew with each barrel after that."

Of the 350 barrels uncovered, 145 were placed in steel drum overpacks, creating a barrel in a barrel, to be repositioned at the burial ground site. Crews were able to finish 46 barrels the same weekend. All work was finished by Friday, April 17.

Now that the barrels are stabilized and there is a significantly reduced fire risk, James said employees will be characterizing the barrels to determine if the uranium has oxidized, reducing the chance for fire. Additionally, characterization data will be used to develop a plan for safely exhuming the remaining barrels from the landfill and evaluating options for treatment and disposal.

It's a plan that will probably be put to use in the near future. McLeod added, "The former employees we spoke with have assured us there are other surprises, like these barrels, waiting for us. Our plan is to be ready, and continue to expect the unexpected."

For more information, contact Bob McLeod at 509-372-0096.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Mill Tailings Give Way to Golf Clubs

As a result of a Department of Energy (DOE) cleanup project, the city of Monticello, Utah, might soon begin making plans for a golf course or a hiking trail to stand on a tract of land now producing harmful radon gas. Mill tailings and materials contaminated by mill tailings are being hauled from the Monticello mill site to a permanent resting place, freeing the site for a better use. Work began on the repository in 1994, and the actual effort of moving the mill tailings to the repository began in June 1997. This step signifies that the environmental cleanup project will soon be completed, making Monticello one step closer to a walk in the park.

The Monticello Mill Site may be home to a golf course or a park once cleanup is finished.

In 1942 an ore-processing mill was constructed in Monticello, and for the next 18 years, vanadium, and uranium were milled. When this mill was finally closed in the 1960s, about 2.4 million cubic yards of low-level radioactive mill tailings, contaminated soil, and other debris remained on the site. These mill tailings are sand-like in nature, and were eventually used for Monticello construction purposes. From there, the tailings have been scattered to surrounding areas by wind and water.

Since these mill tailings resulted from uranium and vanadium ore processing, they pose a potential health risk. These elements contain naturally occurring materials that decay and produce radon—a radioactive gas. If radon is inhaled over a long period of time, it can damage lung tissue and increase the risk of lung cancer.

Due to these risks, DOE entered into an agreement with the U.S. Environmental Protection Agency (EPA) and the State of Utah to clean up the tailings under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Monticello's contaminated properties were placed on the Superfund National Priorities List in 1983, and the mill site was added to the list in 1989.

At the beginning of the Monticello cleanup, DOE realized that a decision had to be made for permanent disposal of the tailings and other contaminated materials. After many discussions with local stakeholders and regulators, DOE decided in 1994 to construct a repository on 858 acres of DOE-owned land south of the Monticello mill site. DOE worked in cooperation with EPA and the State of Utah Department of Environmental Quality to fast-track the Monticello repository design.

With the paperwork out of the way, DOE contractor personnel began to dig the repository. It was lined with a multiple-layer liner system, and was soon ready for the tailings from the Monticello mill site.

Excavation of the tailings from the former mill site began in June 1997. With trucks running 12 hours a day, seven days a week, the project is expected to be completed by June 1999. Then in the spring of 2000, the repository will be capped, and native grasses and shrubs will be planted.

Dale Black, mayor of Monticello, applauded DOE for its efforts, "Monticello has benefitted from the cleanup of the town. We have a better infrastructure, and hopefully we will have a beautiful golf course or something pleasant to look at when all this is done."

For more information, contact Wayne Evelo at 435-587-4049.

Hanford Infrastructure To Be Optimized

For the first time, one plan has been created that captures all aspects of Hanford's infrastructure planning. This plan is expected to save $60 million and optimize Hanford's infrastructure over the next five years.

The plan involves shrinking inventories of stored goods, vehicles, and equipment. Additionally, old and costly facilities will be demolished or vacated, while staffing will be cut, and some services will be subcontracted. "We took a look at the key site activities over the next several years, and then modeled the infrastructure specifically to meet those needs," said Tom Harper, Fluor Daniel Hanford's Director of Infrastructure. "We don't want to provide any 'just because' services that aren't cost-effective. We're going to be 'menu-driven,' providing just what is needed in the most efficient manner possible."

Specific initiatives in the plan will identify core services, and other services that might be subcontracted or changed. Harper emphasized, "Each and every service will be looked at to determine the most productive method for providing it." Decisions will be made throughout the ensuing months with the goals of reducing costs, improving quality, eliminating unnecessary services, and basing all work on requirements and demands clearly accepted by DOE.

For more information, contact Michele Gerber at 509-376-1475.

PUBLIC SERVICE... PUBLIC SERVICE... PUBLIC SERVICE

Students Involved in Oak Ridge Cleanup Decisions

It's probably safe to assume that a teenager can't run a National Laboratory, but 80 high school environmental science students are willing to give it a try. The students have recently given recommendations on the end use of the Oak Ridge National Laboratory to the Oak Ridge Operations Office.

The Bethel Valley Watershed team, responsible for cleaning up the contamination in the area of the Laboratory, has initiated a program to involve Oak Ridge High School students in the cleanup decision-making process. The program involves educating the students and getting their input about the area's background, related risks and challenges, and possible future uses. It was kicked off by an overview presentation at the school. In the presentation, Jane Powell, a Bethel Valley Watershed team member, said, "You are, or will be, taxpayers and this is the legacy that you'll be left with, so we want to hear what you have to say about cleaning up the area."

Dick Ketelle (left), a Lockheed Martin geologist, tells Oak Ridge High School students about the cleanup activities in Bethel Valley.

A series of lectures and discussion sessions has been held at the school to prepare the students to make recommendations about the eventual land use in Bethel Valley. The students also presented their recommendations to the DOE watershed team at the end of the school year.

For more information, contact Jane Powell at 423-576-7807.

DOE and Bechtel Jacobs Adopt-A-School

Imagine adopting 375 sixth, seventh, and eighth graders. While tucking them in at night is not part of the deal, the Department of Energy (DOE) and Bechtel Jacobs are helping these children with their homework—so to speak. DOE recently signed an Adopt-A-School agreement with Piketon Junior High School, just northeast of Ohio's Portsmouth Gaseous Diffusion Plant.

The purpose of the agreement is to provide technical assistance and support to improve science, technology, and mathematics education. DOE and Bechtel Jacobs will support the program through employee participation and equipment resources. "We want this to be a meaningful partnership between the plant and the school system," stated Eugene Gillespie, DOE Portsmouth site manager. "We look forward to working with the schools in the Pike County area."

Under the Adopt-A-School agreement, DOE and Bechtel Jacobs will provide employees to assist the school's administrators and teachers in improving technical programs, providing speakers, and expanding the school's knowledge of scientific and technical concepts. In addition, the program helps distribute surplus computer equipment, establish teacher research programs, schedule field trips to the plant, and support student science fairs. The students are also designing a cover for DOE's Annual Site Environmental Report.

"This will be a very profitable arrangement for the students of Scioto Valley," said Steven McCann, principal of Piketon Junior High School. "So often I hear from students, 'Why do I have to learn this?' By the plant adopting us, a direct connection can be made for the kids to realize why they are learning these things and what they can become in life."

The Adopt-a-School program coincides with a recent Community Service Initiative by former Secretary of Energy Federico Peña. The Secretary has encouraged DOE's field offices and contractors to provide such assistance to schools in regions near DOE sites.

For more information, contact Sandy Childers at 740-897-2336.

PUBLIC SERVICE... PUBLIC SERVICE... PUBLIC SERVICE

WIPP Info Center Offers Answers

With the opening of the Waste Isolation Pilot Plant (WIPP) on the horizon, it is easier than ever to be confused and overwhelmed. With so many acronyms, draft certifications, and budget reports, the public needs a way to retrieve complicated information. However, with increasing questions come increasing answers. This information can be gained by a quick call or e-mail to the WIPP Information Center in Carlsbad, New Mexico. During FY 1997, the Center responded to 1,248 calls and 256,946 e-mails. Answers are at the fingertips of anyone who can type on a keyboard or pick up a telephone. Through the Center's 1-800 hot line and web page, the average stakeholder as well as an employee of DOE can get questions answered.

These questions might include some of the Center's following specialties:

- Announcements of upcoming meetings and public involvement opportunities
- Program information including fact sheets and bibliographies
- Updates on program developments and regulatory compliance
- Answers to specific questions about WIPP and transuranic waste management
- Information on the availability of program documents
- Project specific drawings
- Tour details.

These informational tools are available to the public at no cost via the 1-800 number or the home page. The WIPP Information Center is operated Monday through Friday from 7:30 a.m. until 4:30 p.m. (Mountain Time) and can be accessed by dialing 1-800-336-WIPP or by visiting the World Wide Web at <http://www.wipp.carlsbad.nm.us>. E-mail requests are researched and answered within a few working days. Requests from the 1-800 line are answered immediately or within the working day.

If you know of other public information sources, please contact the editors of *EM Progress* so we can highlight the source in the next edition! ➨

Risk Profiles Tell the Story for Contaminated Sites

The Center for Risk Excellence is developing something new that will make risk much easier to understand. Integrated risk profiles for each of the Department of Energy's (DOE) Environmental Management (EM) sites are being developed in order to explain—in simple terms—the risks at each site.

"This gives the sites a chance to tell everyone what their risks are in an easy to understand way. While much of the risk data is pretty complex, this will give us a powerful communication tool for the Department to use with stakeholders to help them understand how the DOE Strategic Plan goals and metrics relate to risk reduction. In addition, we can show how risk is being utilized to properly prioritize our work," said Mark Bollinger, Center for Risk Excellence Program Manager. Risk Profiles should be completed by late summer and can be obtained from each Operations Office's EM group.

For more information, contact Mark Bollinger at 630-252-9126. ➨

PUBLIC SERVICE... PUBLIC SERVICE... PUBLIC SERVICE

$20,000 Donated for Science Education

Slime, goo, "oohs," and "ahs" are just some of the sights and sounds that fill a new science lab at Cincinnati's Harrison Elementary School. The lab is a reality, in part, because of the effort of Fluor Daniel Fernald, the contractor hired by the Department of Energy (DOE) to clean up the Fernald facility near Cincinnati, Ohio.

The Fernald site has formed a school-business partnership with two local school districts called Successful Teaming for Education Partnership in Science (STEPS). The partnership is designed to help the districts update science equipment and labs, provide teacher workshops, and support curriculum development. Each district has been given $10,000 in order to make sure these goals are met.

The ultimate goal is to help community schools raise science proficiency skills and scores. "When students do with their hands, it stays in their minds," says Pam Stevenson, a Harrison science teacher. "The kids come in and always ask, 'Is it lab day?' They can't wait to do more."

Plans have been made to continue donations at the same level for the next two years and leave a legacy of support for education that will reach from the classroom to the community.

For more information, contact Gary Stegner at 513-648-3153. ➨

Cincinnati students benefit from the hands-on activities of the STEPS Program.

Brookhaven Waste Pit Excavation a Success

The environmental restoration division at Brookhaven National Laboratory (BNL) has safely and successfully completed the excavation of 55 former waste pits at the Lab, removing more than 10,000 cubic yards of contaminated material and soil.

The contents of the pits are a source of contamination for area soils and groundwater. The Chemical/Animal Pits were used from the late 1950s to 1966 for the disposal of chemical containers, glassware, and research animal carcasses. From 1966 to 1981, other waste disposal pits called Glass Holes were used for the disposal of laboratory glassware and chemical containers. The unlined pits contained bottles, cylinders, drums, and other small chemical containers, many of which held various laboratory chemicals.

The project was implemented as a removal action under the Lab's Superfund program. After considering several cleanup options, DOE, Environmental Protection Agency (EPA), and the New York State Department of Environmental Conservation agreed on bulk excavation of the pit contents. By excavating the waste, BNL and DOE cleaned up the source of contamination, eliminating its spread to surrounding soil and groundwater.

Since a significant amount of the wastes disposed of in the pits was contained in fragile glass bottles, special care was taken to prevent liquid escaping from broken bottles from reaching underlying soils. Once excavation was complete and sampling showed that soil cleanup goals had been met, the pits were backfilled with clean soil.

Excavated material was taken to a processing area, where any intact bottles and other containers were separated from the debris and soil. The soil and other segregated wastes were placed on impermeable liners and covered, and the wastes will be disposed of off-site at a permitted waste facility. Sorting and disposal activities are currently underway.

For more information, contact Gail Penny at 516-344-3444. ➨

New System Helps Monitor Hanford Groundwater

More than 100 square miles of Hanford groundwater are contaminated at levels above established drinking water standards. In some places this contaminated groundwater is moving toward the Columbia River where it can potentially harm drinking water supplies as well as the Chinook Salmon spawning grounds. Due to the new Aquifer Sampling Tube System, Hanford groundwater contamination can be more accurately measured.

Bob Peterson, a groundwater specialist with the Environmental Restoration Contract team, connects the sampling tube to a pump used to take water samples.

More than 220 sampling tubes make up the Aquifer Sampling Tube System. The tubes have been driven into the river's bank along 28 miles of the Hanford Reach section of the Columbia River with sampling sites placed about 2,000 feet apart. Each site is similar to a small shallow well and consists of one or more quarter inch plastic tubes implanted at various depths in the shoreline

"With this system," said Bob Peterson, co-designer and installer of the system "we are now acquiring detailed information about what types of contaminants are, or are not, entering the Columbia River—information that is highly relevant to Hanford cleanup decisions."

Hollow steel rods are driven into the soil and the plastic tubes are then pushed down into the rods. Each rod is pulled from the ground leaving the tube in place. Groundwater is then pumped up from the tubes and analyzed for water quality indicators, such as temperature, pH balance, conductance, and contaminants.

"Our groundwater monitoring program helps us make decisions that protect the Columbia River," said Arlene Tortoso, Groundwater Remedial Action Project manager with the Department of Energy's Environmental Restoration Project. "We need to know more about the source and type of contamination in order to develop effective cleanup solutions. This monitoring effort is a cost-effective way to study groundwater conditions and incorporate this information into cleanup actions."

An immediate benefit of the Aquifer Sampling Tube System has been the detailed information obtained about chromium-contaminated groundwater plumes that enter the river. Chromium may be harmful to the early life stages of fall Chinook salmon that use the Hanford Reach riverbed for spawning. "The ER Project is operating two pump-and-treat systems to control the flow of chromium contaminated groundwater plumes," Tortoso said. "This monitoring system provides information on the performance of these systems to ensure they are effective at reducing the amount of chromium entering the river to levels below what is considered harmful to the salmon."

Because the system relies on off-the-shelf technology, it was assembled and installed with a relatively small budget when compared to other monitoring methods. Costs for equipment, supplies, and installation labor total $240,000.

The new system supplements an existing network of monitoring wells that dot the Hanford Site. Information gleaned from existing wells is complemented by the Aquifer Sampling Tube System to provide Hanford with a comprehensive groundwater monitoring system. An added benefit comes from being able to use the Aquifer Sampling Tube methodology at sites where drilling with conventional methods is impractical or prohibited.

Bob Peterson and Jane Borghese, groundwater specialists with CH2M Hill, part of the Bechtel Hanford, Inc.-led Environmental Restoration Contract Team, were responsible for designing and installing the system.

For more information, contact Arlene Tortoso at 509-373-9631. ➨

TECHNOLOGY REVIEW...TECHNOLOGY REVIEW...TECH

Technology Treats Oak Ridge Waste

The Department of Energy's (DOE) East Tennessee Technology Park in Oak Ridge, Tennessee, recently completed a successful demonstration of the Transportable Vitrification System (TVS). This technology was designed to immobilize radioactive waste water treatment sludges in a glass form suitable for disposal.

The TVS is a large-scale, pilot plant for the treatment of low-level mixed waste in the form of sludges, soils, incinerator ash, and similar waste streams. The unit is designed to be easily decontaminated for transport. While initially intended for waste demonstration activities, the TVS, with some modification, can be used to completely treat small- and medium-sized waste streams. "We vitrified some sludge that had been removed from a pond, and some from our Central Neutralization Facility," said Lockheed Martin Project Manager Frank Van Ryn. "We wanted to test the system on wastes with very different chemical makeups, and it performed well on both."

A total of 276 cubic feet of mixed waste was processed during the demonstration. This particular vitrification process reduced the volume of the wastes by approximately 60 percent and chemically bound the hazardous and radioactive waste in a glass form.

"The technology appears to produce a highly durable and leach-resistant waste form," said David Hutchins, DOE Project Manager. "The next step is to determine if this is a cost-effective approach to treating the waste. Studies are underway to evaluate the technical and economic viability of the treatment method for these types of waste."

The TVS demonstration was a joint effort by Lockheed Martin Energy Systems and the Savannah River Technology Center (SRTC) in support of DOE's Mixed Waste Focus Area.

For more information, contact Dave Hutchins at 423-241-6420.

One Facility With Three Purposes: the First of its Kind

"Cleaning up" not only means removing waste from an area or a site, but it also means creating places to store or treat the waste that is removed. This spring, Sandia National Laboratories will have a new place to store wastes collected during the course of the Laboratories' environmental restoration cleanup activities. The facility, called a Corrective Action Management Unit (CAMU) is the first of its kind in the DOE complex that will store, treat, and contain wastes. Located in a remote area of Kirtland Air Force Base south of Albuquerque, New Mexico, the facility should begin accepting waste this spring.

The concept of CAMU is to treat and manage hazardous waste in a safe, monitored facility. This type of waste is typically large in volume, but low in concentrations of contaminants, such as soils involved in oil or solvent spills.

In order to manage this waste, there are two technologies that have been proposed for use at CAMU, and both are currently being evaluated by the Environmental Protection Agency (EPA). One technology is called "low temperature thermal desorption." Using this new technology, wastes are heated to drive off certain hazardous elements. These elements are then collected in filters or are neutralized. The second technology is called "soil washing and stabilization." This process involves separating soil from larger rocks and debris, and then washing the soil to rinse away any metal contamination.

Both of these treatment options will be operated on a temporary basis. Equipment used in these treatments will be moved to CAMU for operation, and will then be cleaned and removed when no longer needed.

Once treatment of the waste is complete, some of the resulting materials will be stored at CAMU. Other materials that do not meet the standards established in the agreement between EPA and DOE, will be packaged and shipped to authorized disposal facilities outside New Mexico.

In order to store the treated waste, the CAMU site will include a permanent containment cell with a specially designed liner to prevent any waste leakage. In case the liner should ever fail, the CAMU has a system in place to detect such a failure. A system of monitoring boreholes beneath and around the site will detect problems or liner leaks. As an additional safeguard, no liquid wastes will be stored in the containment cell. "Sandia and DOE are committed to protection of the public and the environment at the site with the use of a treatment, specially designed liner, and the monitoring equipment," said Elizabeth Oms, project manager at the DOE's Kirtland Area Office.

Sandia plans to use CAMU for wastes taken from several sites, including its most ambitious environmental restora-

CAMU, *continued on page 11*

NOLOGY REVIEW...TECHNOLOGY

Rocky Flats: Free of Saltcrete for the First Time in a Decade

Workers at the Rocky Flats Environmental Technology Site completed the final shipment of "saltcrete," marking the removal of the site's entire inventory. A total of 4,275 cubic meters—236 truckloads—of the low-level mixed waste was shipped to Envirocare, a licensed waste disposal facility in Utah.

From 1985 to 1996, liquid waste from the waste water processing facility at Rocky Flats was processed through an evaporator which created salt brine. The salt brine was mixed with cement to create a solid waste form—*saltcrete*—which meets Department of Transportation standards for offsite shipments. "The progress the Kaiser-Hill Team is making in shipping our waste offsite is evident by the fact that our whole backlog inventory of saltcrete is completely gone and waste storage tents are quickly clearing out," said Alan Rodgers, Division Manager of Waste and Remediation Operations for Kaiser-Hill. "We have gained a great deal of momentum to dispose of Rocky Flats' waste safely and close Rocky Flats down."

For more information, contact Lara Ramsey at 303-966-3463.

A crate containing low-level mixed waste is loaded onto a truck to be shipped offsite to a licensed waste disposal facility.

CAMU, *continued from page 10*

tion project yet, Sandia's Chemical Waste Landfill. The landfill is a 1.9 acre site that has been used for chemical disposal for nearly thirty years.

Sandia began construction of CAMU in December, 1997, and it should begin accepting waste by this spring. Environmental professionals at Sandia expect to begin excavating the Chemical Waste Landfill in May 1998. Although final approval of CAMU came from the Environmental Protection Agency, interested community members helped to coordinate a design and permitting process to discuss the proposed unit. Citizens participated in special working groups where they emphasized concerns about protecting the environment and minimizing the amount of waste through recycling and other programs.

For more information, contact Tracy Loughead at 505-845-5977.

Horizontal Wells Clean Up SRS

The Savannah River Site (SRS) has implemented an innovative and money-saving environmental restoration system with the recent installation of two horizontal wells at the Nonradioactive Waste Disposal Facility (NRWDF).

The horizontal wells are a part of an in situ bioremediation system that will clean up chlorinated solvent in the groundwater at NRWDF. In situ bioremediation utilizes microorganisms in soil to metabolize the contaminants. This creates non-hazardous compounds. Since the contaminants are destroyed in place, costs are reduced, risks and time are minimized, and efficiency is increased.

Horizontal wells offer tremendous potential for easier access for environmental applications due to a number of factors. Because contaminant plumes are most often restricted vertically and extended horizontally, horizontal wells maximize the area covered. This permits access to areas that are not normally accessible. Contaminant sources are often located underneath buildings, ponds, and landfills. Installation of wells under these facilities can often only be accomplished using horizontal wells. Since the wells are longer and cover more ground, fewer wells are needed and money can be saved on operating and maintenance costs.

Although installation costs for horizontal wells are greater than vertical wells, horizontal wells double the cost savings over the life of the project. The cost of the NRWDF horizontal wells project is about $1 million. The wells measure one quarter-mile in overall length and contain the longest screen zone wells used for environmental purposes in the country, measuring up to 900 feet and installed approximately 60 feet below grade.

For more information, contact Mary Jamison at 803-725-0626.

Credits

EM Progress is published quarterly. To learn more about the newsletter, or how to submit an article, please contact Traci Massey at the phone number listed below.

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RECLAIMING THE PAST TO SECURE THE FUTURE

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A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGE

Volume 6 • Number 2

Year End Edition 199

EM Progress in 1997: A Glance at EM Highlights of Last Year

Alm's Legacy: A Vision

In May of 1996, Mr. Alvin Alm became the Assistant Secretary for the Department of Energy's Environmental Management program. As manager of the world's largest environmental cleanup program, Alm was immediately faced with the challenge of continuing to find ways to accomplish physical results. And in just over a year and a half, Al Alm has helped to meet this challenge.

It all began with a vision. In order to accomplish more work with less money and time, Alm put forth his vision to clean up most of the EM sites within a decade. Having a vision is one thing, but actually bringing it to fruition is another. However, Alm's *Focus on 2006* plan has given shape and a framework to implement his vision. *Focus on 2006* prioritizes the actual site cleanup initiatives and provides the tools to accomplish some weighty goals. One such tool is a swift change in management.

The Integrated Planning, Accountability, and Budgeting System (IPABS) is a long title for a plan that seeks to shorten and streamline the previously existing management system. IPABS will restructure management into a single integrated system. With his new vision and creation of new management strategies, Alm focused the program on results.

In creating a time frame of only ten years to accomplish most site cleanup projects, Alm's vision forced the individual sites to do the same. With the shorter time frame, sites began to focus on prioritizing and began finding ways to clean up the highest risk areas. In order to do this, sites have had to seek better technologies and some have made moves toward privatization in order to get these jobs done sooner. Faster technical accomplishments have meant a large reduction in cost in many instances.

During his tenure, Alm has increased the focus on integrating the capabilities of the nuclear weapons complex. As part of the 2006 Plan, EM will develop disposition maps for each site. These roadmaps will indicate the transfer of wastes into and out of the site earmarked for treatment and disposition.

Another major effort resulting from this focus is the effort to consolidate excess plutonium materials from Hanford and Rocky Flats. These excesses will be taken to the Savannah River Site for storage, and cleanup will be possible at Rocky Flats by 2006 at a savings of $1.5 billion.

With these and other accomplishments, Al Alm is saying goodbye. Through a new vision, streamlined management, and accomplishments on his record, Al Alm has left a legacy to be admired that will move EM goals well into the next century. ➪

2006: Vision Becomes Reality

Unless a vision leads to a result, it remains ineffective. In light of this concept, Assistant Secretary for Environmental Management Al Alm articulated his vision for the Environmental Management program of completing as much cleanup as possible by 2006.

On June 12, 1997, Assistant Secretary Alm realized the first step in bringing his vision from an idea to something more tangible. He announced the release of the *National and Site Accelerating Cleanup: Focus on 2006* Discussion Drafts (hereafter Discussion Drafts) for public review and comment. The 2006 Plan is the physical product of Alm's vision to accelerate site cleanup and improve productivity, with a particular focus on completing work at as many sites as possible by 2006. While numerous activities will inevitably continue beyond 2006, the vision and the ensuing plan have been

2006, *continued on page 2*

In This Issue...

DOE/EPA on Target for WIPP 2

Looking Forward, Looking Back: An Interview with Al Alm.....4

New "Halfpack" Container will Reduce Waste Shipments to WIPP 12

Portsmouth Technology Tour 16

Native American Remains Re-Interred at Fernald Site 18

Printed with soy ink on recycled paper

2006, *continued from page 1*

used to streamline EM's focus and reduce overall mortgage costs.

A 90-day public comment period began with the release of the Discussion Drafts and ended last September. According to Assistant Secretary Alm, the public comment process is designed to give Tribal Nations, states, regulators, and stakeholders an unprecedented opportunity to participate in the development of the entire EM program. The public is being asked to help EM formulate the long-term approach to cleaning up the weapons complex and to deal with controversial issues that in the past have been submerged. Comments were received, and several management tools were added in response to stakeholder concerns. Comments were also used to formulate guidance to the sites in developing their Draft 2006 Plans.

However, Assistant Secretary Alm's vision was deemed feasible only if the program could become more efficient. Again he created a vision and challenged EM sites to undertake a number of productivity improvements that would allow the program to achieve full compliance and to complete twelve percent more work by 2006 within the same budget. These improvements, if achieved, could result in savings of $675 million in 1999 alone.

Then in December 1997, EM issued *Preliminary Responses to Comments on Accelerating Cleanup: Focus on 2006, National Discussion Draft* (hereafter Comment Response Document). Since part of the vision deals with increased public participation, the Comment Response Document was developed to convey how EM plans to respond to comments submitted by stakeholders and Tribal Nations during the comment period. As such, the document is intended to affirm EM's commitment to involve the public in the 2006 planning process. The document presents preliminary responses to over 600 comments in over 170 letters received by EM. The Draft National 2006 Plan, currently scheduled for release in February 1998, is the vehicle by which EM will be able to fulfill its commitment to respond to comments.

Key milestones that lead to the issuance of the Initial 2006 Plan include:

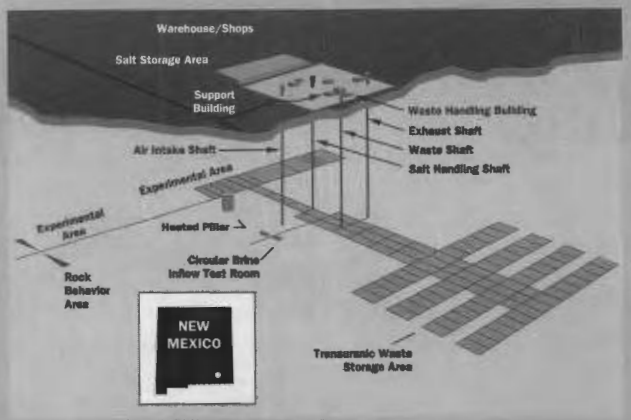
- February 1998—Issuance of National and Site Draft 2006 Plans to Congress and the public.
- March/April 1998—Comment period (45 days) ends on the Draft 2006 Plans.
- Late June 1998—Issuance of National and Site Initial 2006 Plans to Congress and the public.

For more information contact Gene Schmitt at 202-586-8745.

DOE, EPA on Target for Opening WIPP

One vision that has occupied the minds of hundreds of people for decades is closer than it has ever been to becoming a reality. Employees at the U.S. Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) are within a stone's throw of catching up with a dream they've been chasing for almost two decades—opening the world's first underground repository for the permanent disposal of radioactive transuranic waste.

WIPP is a research and development facility operated by DOE's Carlsbad Area Office. Located in southeastern New Mexico, it is designed to demonstrate the safe, permanent disposal of transuranic radioactive waste left from the production of nuclear weapons. Transuranic waste consists primarily of clothing, tools, rags, and other disposable items contaminated with trace amounts of radioactive elements. WIPP is made up of excavated rooms in an ancient, stable salt formation almost half a mile underground. These rooms have remained empty for years, but that fate may not last much longer.



Waste Isolation Pilot Plant Design

Originally sited in the early 1970s, the WIPP project has struggled through a variety of opening delays. One key milestone and major delay has been the receipt of the U.S. Environmental Protection Agency's Draft Certification of Compliance. It is one of the last steps to opening WIPP.

In light of this specific WIPP delay, Assistant Secretary Al Alm made it a first priority to develop a working relationship with EPA. Through weekly meetings and one-on-one discussions with EPA, Alm instigated communication and began to better understand EPA's certification issues. Due to these and other joint efforts, EPA announced the release of the Draft Certification of Compliance October 23, 1997. With this announcement, the barriers to progress appear to be coming down.

"As required by Congress, EPA has reviewed DOE's application, and today, EPA is proposing to certify that WIPP

WIPP, *continued on page 3*

WIPP, *continued from page 2*

will meet health-based, environmental protection standards for disposal of defense-related radioactive waste," said Richard Wilson, EPA acting Assistant Administrator for Indoor Air and Radiation. "The proposed certification is based on DOE's application which has received extensive scientific analysis by the National Academy of Science, International Atomic Energy Agency, and other independent scientists."

"I am very pleased that the EPA has issued a draft certification of compliance for the WIPP," said Energy Secretary Federico Peña. "I appreciate the thorough and timely analysis of the Department of Energy's WIPP application by Administrator Carol Browner, EPA staff, and the independent scientific reviewers.

"This draft certification indicates EPA's preliminary findings that WIPP can effectively meet EPA's environmental standards and safely isolate radioactive transuranic waste. This important step is the result of a vigorous EPA review to ensure that the Department of Energy has answered a wide range of technical questions. We encourage the public to participate in EPA's upcoming hearings and comment on the draft certification."

A public comment period on the proposed EPA rule began on October 30, 1997, and will run for 120 days, ending on February 27, 1998. Public hearings were scheduled for early January in Albuquerque, Carlsbad, and Santa Fe, New Mexico. You may still send written comments to Air Docket, Room M1500, Mailcode 6102, U.S. EPA, 401 M Street, SW, Washington, DC 20460. Send comments by February 27, 1998.

For more information please contact Dennis Hurtt at 505-234-7327. ➪

Privatization: Financing for the Future

Intense budget constraints and an overwhelming workload are just two of the reasons the U.S. Department of Energy (DOE) is engaging the private sector. Through privatization, private companies build and own waste treatment or disposal facilities. The federal government generally, then, would not pay for these services until the work is actually completed.

Privatization offers many advantages. Increased privatized project competition reduces costs over projects conducted by onsite contractors. Earlier initiation of projects in a budget-constrained environment allows facilities to be constructed

Privatization, *continued on page 5*

WIPP Milestones:

1955 The National Academy of Sciences recommends permanent radioactive waste disposal in salt deposits.

1975 The U.S. Geologic Survey recommends creating the WIPP outside of Carlsbad, New Mexico.

1979 Congress authorizes the Waste Isolation Pilot Plant to research and develop safe methods of disposal of radioactive wastes generated by defense facilities.

1980 The U.S. Department of Energy issues its Final Environmental Impact Statement on WIPP.

1981 New Mexico sues DOE and the Interior Department. The suit is resolved by an agreement requiring more studies and guaranteeing the state more information. The first exploratory shaft is drilled.

1982 Underground excavation begins. DOE and the state of New Mexico sign an agreement committing DOE to seek Congressional money to upgrade WIPP routes and to clarify DOE's liability for accidents in route to, or at, WIPP.

1983 DOE proceeds with full construction of WIPP.

1984 WIPP must comply with state, federal, and local laws and regulations. This includes those of the Environmental Protection Agency (EPA).

1986 EPA says WIPP must comply with 1976 RCRA for mixed hazardous and radioactive waste disposal.

1989 DOE applies to the Interior Department for the authorization to withdraw from public use, 10,240 acres of federal land surrounding the site. DOE issues its WIPP five-year test plan. DOE says July 1, 1990 is the earliest possible WIPP opening date.

1990 DOE issues WIPP's Final Supplemental Environmental Impact Statement (SEIS I). DOE issues its revised five-year plan for WIPP test phase.

1992 Congress passed the WIPP Land Withdrawal Act, which assigned authority for the land to DOE and gave EPA substantial responsibility for regulating many of DOE's activities at WIPP.

1996 Congress ratified a conclusion that the site's safety performance could be adequately assessed with a combination of nonwaste tests at the site and laboratory mathematical models. DOE applied for certification on October 29.

1997 DOE completes SEIS II. On May 16, EPA declared DOE's application complete. If EPA certifies that WIPP meets the disposal standards and satisfies other legal requirements, the facility can begin accepting waste 30 days after receipt of certification, or as early as May 1998. ➪

Looking Forward, Looking Back: An Interview with Al Alm

This December, Al Alm took time from his busy schedule to meet with the editors of *EM Progress*. Alm reflected on his tenure as EM Assistant Secretary and his aspirations for the program as it heads into the next century.

Q: How is the EM program different today from when you first arrived?

A: I think that we've changed the way we think about the program and the way we manage it. We've accelerated our focus to 2006, but we've also created a management system to back it up: the Integrated Planning, Accountability, and Budgeting System. The system focuses on projects, not activities, which should help us get things done more quickly and within budget. We've also set up teams to work with the field offices to overcome any barriers. And we've combined the budgeting and the planning systems so that they reflect where we've come and where we're going.

Q: Do you think you have enough staff to get the job done?

A: We dealt with what happened on the Hill and achieved a much better result than we expected, but at a cost. We knew that we had to reduce our headquarters accounts or that Congress was going to do it to us. There were almost 700 people when I started, and we've got less than 450 now. I think any further budgetary reductions or RIFs would be incredibly counterproductive. This program needs to go through the healing process right now. I think another RIF would destroy the EM program.

> *"I believe that you can shape the future if you set a goal and work at it."*
>
> *– Al Alm*

Q: How has public involvement changed since you've been here?

A: For one thing, we've had unprecedented public participation with the 2006 plan. The public has always participated in pieces of what we've done—the budget, individual actions—but never in formulating the entire program. We didn't allow them to get involved. So I think it says a lot that we've made meeting with them a real priority. I have met personally with stakeholders on field trips, and many of them have called me. Some also serve on the Environmental Management Advisory Board. **I believe it's important to involve the public on all the different levels: state and local government officials, regulators, tribal nations, business leaders, contractors, and the site advisory boards.**

Q: What is the most significant thing you've brought to the program?

A: I think I've had an impact on management by shifting the program's focus. What a political executive—someone like me—can accomplish is to set a direction and then institutionalize it.

Actual physical accomplishments span a long period of time. We were able to get the draft compliance certification for WIPP out, but WIPP has been around for quite a while. We also closed PUREX, but again, this was accomplished over a lengthy period.

Q: How do you deal with EM's rate of change?

A: Well, the pace of change is always difficult and untidy, but it happens in all institutions. It's absolutely necessary. If we hadn't implemented change by focusing the program on closure, I am convinced that it would have withered away. And I think there are a lot of people in the Congress and elsewhere who would agree with that.

Q: Look into the future. It's 2006 now. What's happening with the EM program?

A: Most of the sites we slated for cleaning have achieved that goal. A lot more innovative technology has been deployed throughout the program, resulting in substantial savings. As far as contracts go, large sites like Oak Ridge are being managed via pure integrator contracts where most of the work is privatized. At sites with closure contracts, economic transitioning activities are occurring or cleaned-up areas are being conserved or used as open spaces for the public.

Interview, *continued on page 5*

Privatization, *continued from page 3*

now, rather than decades from now. As projects are completed earlier, fixed costs are reduced and risk averted. For workers, these projects provide job opportunities that otherwise would not be available. Finally, privatization encourages technical competition.

With these and other benefits in mind, Assistant Secretary Al Alm sought to create several privatization management initiatives. Alm sought to make sure DOE had in place the staff and skills needed to manage privatization projects. This involved everything from evaluation of project managers to senior official appointments, and includes the development of a Privatization Program Management Plan that outlines staff responsibilities. Further, Alm initiated the development of Project Data Sheets used to keep Congress and the public updated on each project's technical and financial information. If privatization was the vision, new managerial initiatives were deemed the method to bring the vision to reality.

The Fiscal Year (FY) 1998 Budget provides privatization funds to treat high-level wastes at DOE's Hanford facility in Richland, Washington; two projects to store spent fuel rods at the Idaho National Engineering and Environmental Laboratory and the Savannah River Site in South Carolina; a project to treat transuranic waste at Oak Ridge; a project to treat low-activity waste at Idaho; and a project to transport transuranic wastes destined for WIPP in Carlsbad, New Mexico.

DOE's cleanup program is the largest and most costly in the world. Completing this program earlier will reduce risk from these deteriorating facilities and will cut long-term budgetary requirements.

For more information contact
Thad Konopnicki at 202-586-6331.

Interview, *continued from page 4*

Q: And are you saying that as an optimist or a realist?

A: Any manager has to be an optimist. As Yogi Berra said, "It's hard to make predictions, especially about the future." **It's all about creating a vision and having the will to make it happen.** When President Kennedy committed to landing a man on the moon nobody knew how to do it, but his will drove the system.

Q: What qualities will your successor need to walk in and take over?

A: The ideal candidate would have management experience in both the public and private sector. And he or she would have to understand this program. Preferably the person would have a technical background, although I don't think that's critical. Also, **he or she would have to have great tenacity, patience, and a sense of humor.**

Q: What yardstick would you use to measure your own success?

A: The real yardstick will be to see how much of what we have started continues. I find **it hard to believe that the focus on completion isn't one of those ideas that's so powerful it will continue.** I think "projectizing" the entire management system completely changes the view of what you're doing. You're no longer running activities but projects—which have a beginning, middle, and an end. I think both the accountability systems and the project teams we initiated will make a big impact.

Q: What are your plans after you leave?

A: Well I haven't really formulated any. I will spend some time with a non-profit, contributing intellectually to environmental activities. I've been involved in environmental and energy activities over a large number of years. And I'll also do some consulting in areas that I think are interesting and important.

Q: What would you like to see happen after your departure?

A: It's really important to maintain a clear program focus—especially in this time of constrained budgets. That means closing as many sites and projects as possible by the year 2006 to achieve substantial savings. It's also crucial to improve the program's efficiency. It's a necessity in today's budget climate. Privatization will help us meet our efficiency goals and move ahead much faster than if we have to rely solely on the annual budget.

Q: How would you most like to be remembered?

A: **I'd like to be remembered as somebody who worked with a career staff to create a common vision and took that vision forward in an institutional light.** I'd also like to be seen as someone who possesses high integrity in his relationships with the job and with fellow employees.

Q: Any last words?

A: This has got to be one of the toughest jobs anywhere. It's huge. If I were in the private sector running a six billion dollar company, everybody would recognize that as a major task. Here, you're not only running the program, but you're also relating to members of Congress, stakeholders, and other Department staff. This job has incredible, incredible demands.

Q: Are you glad you did it?

A: Yes. I believe public service is critically important, even if it requires personal sacrifices. I personally believe the contributions I made were worth the sacrifice.

Intermodal Initiative Saves Millions at RMI Decommissioning Project

The RMI Decommissioning Project in Ashtabula, Ohio, made the switch from truck to rail and will save over $5 million during the next five years. By using intermodal rail to transport decontamination and decommissioning (D&D) waste from Ohio to a burial site in Utah, RMI is cleaning up in more ways than one.

The overall mission of the RMI Decommissioning Project is to decontaminate or dismantle and dispose of approximately 1.2 million cubic feet of equipment, building debris, and soil to return the 26-acre site to a green field condition. Although original plans involved the shipment of waste via truck, a project initiative to identify opportunities for improved efficiency and reduced costs resulted in the decision to transition to rail transportation.

Development of the rail transportation concept required a choice between gondola cars and intermodal containers. Based on lower initial capital requirements and an ability to implement intermodal transportation nine months sooner than the gondola option, the project undertook preparations for intermodal operations.

A subcontracted broker provides a full range of transportation support services for the project. This includes arranging for container transportation from the project site to the intermodal terminal in Cleveland, transfer to the rail carrier, and tracking of containers through the required rail transfers en route to the burial site. A daily report of the location and status of each container is provided to allow for effective waste management planning.

An operator at the RMI Decommissioning Project loads a bag of shredded D&D debris into an intermodal container for shipment to the Utah burial site.

Calculations predict that the RMI Decommissioning Project will ship more than 2,000 containers to remove all waste from the site. Efforts are underway to reduce the overall shipping volumes, thus further lowering costs.

The RMI project's straightforward improvements to D&D operations will save over five million project dollars.

For more information contact Ward Best, DOE/RMI, at 216-993-1944 or Jennifer McCloskey, EM-42, at 301-903-7427.

3M/Argonne Innovative Technology Saves Time and Money

Scientists from 3M Company (St. Paul, MN) and Argonne National Laboratory-East, in conjunction with IBC Advanced Technologies, Inc. (American Fork, UT), have developed Empore™ Rad Disks, a technology that can cut the cost and time needed to analyze radioactive chemicals in the environment. The disks can reduce the number of steps used in other analytic methods by as much as 90 percent, with equivalent or better results.

Radiochemical analysis is of particular concern to the Department of Energy, which spends more than $300 million annually on this activity. Because new environmental technologies such as Empore™ Rad Disks can translate into major savings, scientists are using them to test ground water, surface water, and nuclear fuel storage-pool water at Department sites and nuclear powerplants. Current development is focusing on adapting the membranes for use in field analysis. The field-sampling system could cut total sampling turnaround time from about one week to as little as one hour in some cases.

The Department's Office of Science and Technology supported Argonne's effort under a cooperative research and development agreement. This innovative technology has won a 1996 R&D 100 award for technical innovation, and its developers have won a 1997 award from the Federal Laboratory Consortium for excellence in technology transfer.

For more information on Empore™ Rad Disks contact Keith Hoffmann, New Products Department, 3M at 612-575-1795 or fax 612-737-4538.

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PUREX Closes with Money and Time to Spare

Several hundred proud and emotional Hanford workers, and Assistant Energy Secretary Alvin Alm joined forces last summer in celebration. June 20 marked the final and successful deactivation of the Plutonium Uranium Extraction Facility (PUREX).

PUREX was the largest of the nation's Cold War plutonium processing plants and the most visible symbol of Hanford's 45-year defense mission. From 1956 to 1989, PUREX produced the lion's share of U.S. plutonium, but with the PUREX deactivation, Hanford is transformed into a lamb in its ability to create nuclear materials.

"The successful completion of the PUREX Deactivation Project demonstrates the nation's commitment to non-proliferation and DOE's commitment to safe, cost-effective cleanup of its defense facilities," Alm told employees and Washington State dignitaries. "Hanford's ability to come up with innovative solutions has paid off for the American taxpayer."

Back in 1993, the PUREX deactivation was projected to cost $222.5 million and take five years to complete. However, in light of saving taxpayer dollars, the project was completed $78 million under budget and more than a year ahead of Schedule. During the ceremony, PUREX workers presented Assistant Secretary Alm with a six foot long "check" in the amount of $320 million. This figure represented the mortgage reduction savings over ten years. The check was made payable to "More Hanford Cleanup."

Secretary of Energy Federico F. Peña, in a statement read by Alm, said the project was a milestone not only for Hanford, but for the nation. "The PUREX deactivation meets President Clinton's commitment to nuclear non-proliferation," he said. "It is also a national model for efficiency and innovation. The Department of Energy and our contractors worked closely with the U.S. Environmental Protection Agency, the Washington State Department of Ecology, the Hanford Advisory Board, Indian tribes, and our stakeholders. This group focused on a common goal and met it with flying colors."

For more information, please contact Colleen C. Clark at 509-376-5985.

Alm at the PUREX deactivation ceremony.

Environmental Restoration: It's Happening at Hanford

When DOE's Assistant Secretary for Environmental Management Al Alm dedicated the Hanford Site's Environmental Restoration Disposal Facility (ERDF) last year, he described the facility as "emblematic of the new Hanford." Environmental cleanup is the "new Hanford's" mission, and the ERDF provides a dramatic example of how far and fast the Department is moving to clean up Hanford.

Since it opened for full-scale remediation work on July 1, 1996, the ERDF has disposed of more than 500,000 tons of contaminated materials. The waste has come from sites near the B and C Reactors along the Columbia River, an area Department stakeholders and regulators have asked to be cleaned first. Since Mr. Alm's last visit, remediation work has expanded to include sites near B, C, and D Reactors and Hanford's 300 Area.

Complementing the cleanup of contaminated soils, Hanford's aggressive decontamination and decommissioning activities are exemplified by ongoing work at C Reactor. Along with Bechtel Hanford, the site's prime Environmental Restoration

Hanford ER, *continued on page 9*

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Hanford Employee Group Honored for Saving Millions

It's not often that you get hammered for saving American taxpayers more than $20 million, but that's exactly what is happening to a group of Hanford employees. In this case, however, the "hammer" is the prestigious Silver Hammer Award from the National Performance Review (NPR) Board.

The 12 employees—six from the Department's Richland (RL) Operations Office and six from Bechtel Hanford, Inc., Hanford's prime Environmental Restoration (ER) contractor—were recognized in May 1997 for identifying more than $20 million in cost savings through their work on the ER Business Quality Improvement Team (BQIT).

The NPR Board, which is chaired by Vice President Al Gore, was formed to identify ways to save taxpayer's hard-earned dollars, provide improved service, and break the old mold of government. This is the first NPR Silver Hammer Award given to a Hanford group for new work practices and procedures originating solely at Hanford, and based on the results of the ER BQIT's effort, that mold has been shattered.

DOE-RL Acting Manager Lloyd Piper, center, and Linda Bauer, Assistant Manager for Environmental Restoration, present the Silver Hammer Award to DOE's Steve Sandlin for leading a team that saved taxpayers over $20 million.

"When DOE awarded the Environmental Restoration Management Contract to Bechtel, it did so in the hope that new and better business practices would help improve the way cleanup work is performed at Hanford," said Lloyd Piper, Richland Operations Acting Manager. "This award is further proof we made the right decision and shows how DOE, in a teaming and partnering relationship, and its contractors can improve business operations that result in more work being done for less money, which benefits American taxpayers."

The ER BQIT identified significant ER Project savings during Fiscal Years 1995 and 1996. Team members were encouraged to question traditional work approaches by cutting across organizational lines to determine faster, easier, better, and less expensive ways of doing business. As a result, team-initiated operational changes ranged from reevaluating the need to train all ER Project employees in hazardous waste handling—a savings of $3,215,000 in Fiscal Year 1995—to changing how indoor radiation protection signs are procured, an $18,000 savings.

"Our hope in forming BQIT was to make it a catalyst for establishing a new way of doing business at Hanford and in the process save $5 million," said BQIT Team Leader Steve Sandlin, Business Manager for RL-ER. "We far surpassed the initial cost savings, but what has been much more satisfying to me is the change in operating philosophies we see today at Hanford."

BQIT-initiated savings have become an inherent part of the ER Project. "By focusing resources on discrete projects, applying best commercial practices and maximizing competitive subcontracting, the ER Project completed a combined $391 million worth of work for $333 million during Fiscal Years 1995 and 1996," said Linda Bauer, Assistant Manager for Environmental Restoration. "That's a major savings in anyone's books, whether they're commercial or government."

For more information contact the Office of External Affairs at 509-376-7501. ➡

FY 1997 Highlights: Hanford Environmental Restoration Project

- Full-scale remediation work occurring at three sites along the Columbia River.
- More than 500,000 tons of waste disposed of in ERDF.
- Five pump-and-treat systems built and operational.
- N Area facility deactivation 93-percent complete (78 of 85 buildings deactivated); removed 12,000 cubic feet of low-dose materials; removed 18 of 24 grouted monoliths containing high-dose materials; transferred 40,000 gallons of radioactive water out of fuel basin.
- Met all ER Project Performance measures and Tri-Party Agreement Milestones.
- More than $11 million in cost savings/avoidance achieved.

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Hanford ER, *continued from page 7*

(ER) Project contractor, the Department is preparing to place C Reactor in an interim safe storage state where the reactor's block can remain in a newer, safer, smaller structure for up to 75 years. In the spirit of doing more with what it has, the Department's Science and Technology Division is using the reactor as a testing ground for new or emerging technologies that may prove safer, less expensive, and more efficient ways of decommissioning aging nuclear facilities both at Hanford and throughout the DOE Complex.

While ERDF and C Reactor are visible examples of cleanup, equally impressive work is being performed by the ER Project's ground water pump-and-treat and vapor-extraction stations. These sites have pumped over 160,000,000 gallons of contaminated ground water out, processed it through filtration systems, and injected the treated water back into the earth. At N Reactor, work is on track to have the only dual-purpose reactor in America completely deactivated by the close of April 1998.

On July 7, 1997, remediation work began in the 300 Area, where the Department's Richland Operations Office oversaw nuclear fuel fabrication and research activities. Locations in the 300-FF-1 site include three former liquid waste disposal ponds/trenches, a burial ground, and three landfills. Excavation work began on one of the disposal trenches where low-level radioactive and hazardous waste such as uranium, arsenic, and thallium were pumped during Hanford's early operational years. Contaminated soils from the trench are excavated and loaded into containers, which are then trucked to the ERDF for disposal. December 1999 is the scheduled completion date for 300 Area work.

The progress being made in the field is possible, in part, because of the partnering efforts with the Department's regulators, the U.S. Environmental Protection Agency, and the State of Washington Department of Ecology. Partnering has paid off on the ER Project, and regulators are an integral part of the discussion and planning necessary to clean up contamination at Hanford, cleanup work that must be done on a tight budget and account for the interests of many groups.

Although much has been accomplished over the past year at Hanford, the Department continues to accelerate remediation activities by refining its operations and improving its business practices to ensure even more of every cleanup dollar is spent where it should be—directly in the field.

For more information contact Mike Talbot at 509-376-5632.

The white facility trailer to the right is 35 feet above the floor of the facility, sitting atop more than 500,000 tons of contaminated waste.

Hanford's C Reactor Cleanup Represents "Results-Oriented Work"

Hanford's C Reactor is receiving a radical facelift which began March 1997 and will continue through September 1998 as a result of the Interim Safe Storage (ISS) Large-Scale Technology Demonstration Project.

The ISS project is a joint venture between the Department of Energy's Environmental Management division and its Federal Energy Technology Center, and is managed by Bechtel Hanford. Personnel working on the project will demonstrate how innovative technologies can reduce the time and costs for decontaminating and decommissioning a nuclear facility, in this case a graphite moderated production reactor.

A primary objective of the project is to eliminate those parts of C Reactor that require frequent repairs. Consequently, the reactor's existing support structures will be removed, leaving the four-foot-thick concrete walls surrounding the reactor's core. A new stainless steel roof will then be constructed on top of these walls. These changes will make the "new" C Reactor structure 70 percent smaller than the existing building and provide safe storage of the reactor's core until its final disposal is completed, while also reducing risks to workers and the environment.

Following a December 1996 tour of the ISS project, Congressman Doc Hastings (R-WA) told Hanford Manager John Wagoner the concept and the fast-track

C Reactor, *continued on page 10*

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

C Reactor, *continued from page 9*

nature of the ISS project is impressive. "Congress asked DOE to look for a new approach in developing solutions for cleaning up aging nuclear facilities," Hastings said. "This project represents result-oriented type of work we need to pursue."

"We're pleased that the Congressman could tour this project to gain a first-hand knowledge of the work we are doing," Wagoner said. "By demonstrating how we're solving problems and implementing solutions, we are showing Congress, our regulators, and our stakeholders decisive evidence how we are cleaning up Hanford Site."

For more information contact Jim Goodenough at 509-376-0893 or Shannon Saget at 509-372-4029. ➨

Hanford's C Reactor receives a radical facelift as a result of the Interim Safe Storage Project and Large-Scale Technology Demonstration. The reactor building and support facilities (shown at left in a June 1996 photograph) will either be removed or reduced. A significantly smaller reactor building (shown above in an artist's rendering) is all that will remain when the project is completed.

Rocky Flats Reduces Risks by Draining Plutonium Solutions

Building 771 at Rocky Flats has recently completed some risky business. In the spirit of reducing risks, workers at Rocky Flats have drained the last liters of plutonium solutions from the final high-level tank in Building 771. By accomplishing this task, Rocky Flats has eliminated the number one risk to workers in that facility.

In November of 1994, the Department of Energy's Plutonium Working Group Report ranked Building 771 as the single most vulnerable facility in the DOE complex. This ranking was based on how safely plutonium was stored and the potential risks created by this plutonium. By draining 3,400 liters of solution from 23 tanks in Building 771, Rocky Flats has greatly reduced these risks. Fifteen low-level plutonium tanks, four uranium tanks, and four high-level plutonium tanks have been drained, and all low-level plutonium solutions have been stabilized. All high-level solutions have been transferred to Building 371.

"We are extremely proud of the workers who have logged three years of hard work to make this building safer for their fellow workers and safer for Colorado," said Kaiser-Hill President Bob Card. "We have a lot of work left to do and potential hazards to eliminate, but today we can pause to celebrate this monumental achievement."

For more information contact Jennifer Thompson at 303-966-6285. ➨

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Contamination Source Removed from Rocky Flats' Mound Area

In April 1997, workers at the Rocky Flats Environmental Technology Site removed a source of chemical contamination at the Mound area, a former waste drum storage site. The Rocky Flats Mound area is a top priority cleanup site because chemical contamination from the site migrates into shallow ground water nears the area. By the removal of more than 700 cubic yards of soil, the contamination has been removed.

The Mound site was used in the late 1950s to store 1,405 drums containing waste products contaminated with plutonium and uranium. Many drums also contained industrial chemicals. In 1970, all of the drums were removed along with most of the radioactively contaminated soil. However, chemical contamination remained in surrounding soils and had been detected in monitoring wells and soil borings near the Mound site. "With recently completed excavation of the Mound, the chemical contamination source has now been removed," said Ann Sieben, Kaiser-Hill program manager for Environmental Restoration.project manager. planning documents," she explained.

However, soils taken from Mound had to be cleaned. Workers at Rocky Flats have safely completed the treatment of more than 700 cubic yards of chemically contaminated soils. All treated soils met applicable clean up levels and are now being returned to the ground. Soil removed from Mound was treated using a low-temperature thermal process that involves heating the contaminated soil to temperatures ranging from 150 to 300 degrees Fahrenheit. The heat causes chemical contamination to pass off as vapors that are collected and condensed into liquid. The process has been previously used to treat soils excavated from Trenches Three and Four and Ryan's Pit, three other top-ten cleanup areas.

Workers at the Rocky Flats Environmental Technology Site excavated more than 700 cubic yards of soil to remove a source of chemical contamination at the Mound area, a former waste drum storage site.

After the soil was treated, it met regulatory performance standards established by the Department of Energy, EPA, and the Colorado Department of Public Health and Environment, and was returned to the Mound site. The area has been reseeded with native grasses. "With the completion of work at the Mound, four of the top-ten risk environmental clean up sites at Rocky Flats have been eliminated," said Sieben. "This progress means a substantial reduction in potential risks to the workers, the public, and the environment."

The Mound area ground water is currently collected and treated onsite to remove chemical contaminants. As part of a separate cleanup activity beginning this summer, a passive treatment system will be installed to more efficiently treat the remaining contaminants in the Mound area ground water.

For more information contact Jennifer Thompson at 303-966-6285.

Workers at Rocky Flats have safely completed the treatment of more that 700 cubic yards of chemically contaminated soils.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

New "Halfpack" Container Will Reduce Waste Shipments to WIPP

Engineers at the Waste Isolation Pilot Plant (WIPP) have built two full-scale prototypes of a new container for shipping the Department of Energy's contact-handled transuranic waste. This new container, called the "Halfpack," was developed specifically to carry heavier-than-average drums of waste and to complement the existing Transuranic Package Transporter (TRUPACT-II) container which is used to carry lighter drums.

The TRUPACT-II was developed to transport transuranic waste, and each container can hold up to fourteen 55-gallon waste drums. A single transport truck can carry up to three TRUPACT-II containers—for an optimal load of 42 average-weight drums (312 pounds each) in one shipment. However, some heavier drums may weigh up to 1,000 pounds each, and Transportation Department restrictions limit the total weight of a truck and its contents.

The Halfpack container is a shorter, lighter version of the TRUPACT-II that will be able to carry more of these heavy waste drums per truckload. By using the Halfpack, the number of transuranic waste shipments to the WIPP will be reduced by about 2,000.

Another benefit of the Halfpack container is its ability to transport larger waste drums. Transuranic waste sites have placed several thousand 55-gallon waste drums of questionable condition into 85-gallon drums in a process called "overpacking." The Halfpack container will hold four 85-gallon drums, seven heavy 55-gallon drums, or one standard waste box. By transporting 85-gallon drums in the Halfpacks, workers will not have to repackage the waste into 55-gallon drums to fit into TRUPACT-II containers. This will lessen the risk of worker exposure to radiation to amounts that are as low as reasonably achievable and minimize costs.

The Halfpack engineering prototype was tested at Sandia National Laboratories. The design is in the process of being finalized, and two certification test units are being built in accordance with requirements of the Nuclear Regulatory Commission (NRC).

Once certification testing is complete, in April 1998, a Safety Analysis Report will be prepared and submitted to NRC for review and approval. This should be completed by the end of August 1998.

For more information contact Dennis Hurtt at 505-234-7327.

The Halfpack container is designed to carry heavier-than-average waste drums, thereby reducing the number of transuranic waste shipments to the WIPP.

Savannah River Leading Complex in Pollution Prevention

The Savannah River Site (SRS) has found that an ounce of prevention provides success in the Department of Energy's Pollution Prevention Awards Program. DOE-Headquarters recently announced that Savannah River Site captured four of the eleven awards, more than any other site in the complex. Based on major cost savings and increased cleanup activities, Savannah River comes out on top.

"I'm very proud of our DOE employees and their contractor counterparts for winning these awards," said DOE-SR Manager Mario Fiori. "The innovations that earned this recognition resulted from excellent cooperation and are indicative of our continuing efforts to do business more effectively and efficiently—to work smarter. They are yet more proof of our reputation as DOE's site of choice."

For more information contact Cynthia Anderson at 803-725-3966.

Savannah River Site has saved millions of dollars at the site and throughout the DOE complex.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Savannah River Completes Decommissioning of First Tritium Facility

On June 20, 1997, the Department of Energy completed decommissioning activities at Savannah River Site's Building 232-F, marking the culmination of a two and a half year effort to dismantle and decommission the first full-scale tritium production facility in the free world. The project's conclusion represents the first decommissioning of a facility containing both radioactive and hazardous material at Savannah River Site.

Opened in 1955, the 232-F tritium facility produced tritium and plutonium for use in thermonuclear weapons. However, when the higher capacity, more versatile Building 232-H became operational in 1958, Building 232-F was shut down and all nuclear materials were removed. Abandoned in 1959, the building began to deteriorate over time.

In 1994, a decision was made to decontaminate and dismantle the run-down and obsolete building. The Department and Westinghouse Savannah River Company jointly developed specifications for a $1.6 million fixed-price contract to perform the work, which involved characterizing the area, demolishing the facility, packaging waste, and clearing away the area. The facility's closure was highlighted by the planting of grass seed for erosion control and the symbolic return to a green-field state.

For more information contact Thomas Johnson at 803-725-4319.

In January 1997, demolition experts brought down a 200-foot exhaust stack formerly used at the first tritium facility at the Savannah River Site.

SRS/OR Recycling Partnership Could Save Big Bucks

Today the Department of Energy is doing business differently. An excellent example of this is the teaming effort underway between the Department's Savannah River and Oak Ridge Operations Offices to determine if radioactive scrap metals can be used to produce canisters for Savannah River's Defense Waste Processing Facility (DWPF). If radioactive scrap metals prove to be practical for this use, they will no longer be considered a waste, but a resource that can save considerable taxpayer dollars.

The DWPF will use more than 6,000 canisters to process the high-level waste currently stored in underground tanks at the Savannah River Site. In the past, these canisters were manufactured from virgin stainless steel at a cost of approximately $7,000 a canister. However, the Department has a large inventory of radioactive scrap metal with low levels of contamination, which limits the scrap metal's marketability outside the Department of Energy complex. In addition, disposal of this radioactive scrap metal is a costly proposition because it must be treated as low-level or transuranic waste.

But Savannah River and Oak Ridge are looking at the radioactive scrap metal as a potential resource rather than a waste. Recently, the Oak Ridge Operations Office was designated as the Department's lead site for recycling activities. Recycling this radioactive scrap metal would save disposal costs currently estimated at up to $15 million and avoid the cost of expensive virgin stainless steel. These savings are expected to offset the added cost of the recycling effort.

Because of these dual benefits—waste minimization and cost savings—Savannah River has requested that Oak Ridge fabricate and test several canisters made from radioactive scrap metal. If the tests are successful, Savannah River and Oak Ridge will continue this partnership to have several hundred canisters fabricated from the scrap metal. Ultimately, radioactive scrap metal could be used to fabricate up to 5,000 DWPF canisters required in the years ahead resulting in an overall savings to the taxpayers of several million dollars.

For more information contact Ella J. Merrell at 803-208-6083.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Oak Ridge Completes Demolition Project Ahead of Schedule

The East Tennessee Technology Park (formerly the Oak Ridge K-25 Site) has a new name as well as a new skyline thanks to the innovative efforts of a team of personnel from DOE-Oak Ridge Operations, Lockheed Martin Energy Systems, M-K Ferguson, and Foster Wheeler. The team completed a demolition project two months ahead of schedule and $4.5 million under budget as one of the Department of Energy's first incentive task orders, a new approach to executing projects that places more responsibility and liability on contractors with monetary incentives for desired performance.

The project eliminated huge cooling towers built about 50 years ago when the gaseous diffusion process first was used to enrich uranium for the Manhattan Project. The process generated a great amount of heat that was dissipated through the several large, wooden water towers resting on concrete basins more than 20-feet deep, 60-feet wide, and 300-feet long. After the enrichment process was put on permanent standby in 1987, the cooling towers were drained and left to dry out. As a result, they posed a serious fire hazard.

"The towers definitely had outlived their usefulness," said Paul Larson, Energy Systems project manager. "Health and safety concerns made it necessary to demolish them."

The project to tear down the towers (including removal of some 85,000 cubic feet of sediment in the basins) presented an opportunity for the team to apply innovative methods and commercially recognized approaches. Begun in the spring of 1994, the task followed the Department's Environmental Management commitment to the development of cost-effective and results-oriented solutions to environmental restoration projects.

By the project's end, a total of 17,000 cubic yards of asbestos-containing materials were disposed of, and nearly 11,000 drums and 116 ST-5 boxes (4 x 4 x 6 feet) of sediment and wood chips were removed. More than 200,000 work hours were logged with only one recordable injury and no notices of violation or deficiency from any state or federal regulatory agency.

"Completion of this project was a team effort," said Larson. "It's amazing what can be accomplished when everyone works together towards a single goal regardless of what company they're from."

Demolition of cooling towers, above, at East Tennessee Technology Park have given the site a new skyline. The demolition project came in ahead of schedule and under budget.

For more information contact Daryl Green at 423-241-6198 or Walter Perry at 423-576-0885.

Department Completes Cleanup of New Brunswick Site

The Formerly Utilized Sites Remedial Action Program (FUSRAP) recently celebrated the completion of the New Brunswick, New Jersey, site. The New Brunswick site was the 24th of FUSRAP's 46 sites to be completed.

In cleaning up the site, FUSRAP used a segmented gate system to reduce the volume of waste requiring disposal. The system reduced the waste volume by about 55 percent, saving approximately $1.2 million. Officials are now working with the Government Services Administration to transfer ownership of the New Brunswick property away from the Department of Energy.

Shown from left, DOE Site Manager Estraletta Green and Former Sites Restoration Division Acting Director Bill Seay display the 24th Site Completion Medallion alongside Bechtel FUSRAP Program Manager Al Boos and Project Manager Mike Redmon. Bechtel is the Department's prime contractor for FUSRAP.

For more information contact Melyssa Noe at 423-241-3315.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

FUSRAP Completes 1,000,000 Hours of Safe Work

Workers on the Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP) have worked more than one million hours without a lost-time accident. FUSRAP's million hours of safe work covers a period from October 4, 1995, through March 23, 1997.

FUSRAP's program manager Al Boos, of Bechtel National Inc., credits the achievement to the dedication of onsite workers as well as the strong leadership of FUSRAP's contractor and subcontractor management. Boos is responsible for implementation of the safety and health program on FUSRAP.

"Safety considerations are designed into the work plans," Boos said. "However, it's the focus of the onsite workers that keeps the work going smoothly and safely in the field. The program's positive safety culture is a result of each individual's commitment to safety excellence and FUSRAP's Zero Accident philosophy."

FUSRAP is continuing its tradition of superior safety performance and has set its sights on completing two million hours of safe work.

FUSRAP was coordinated through DOE's Former Sites Restoration Division. Bechtel National Inc. was DOE's prime management contractor for FUSRAP, and Science Applications International Corporation was the environmental compliance contractor. FUSRAP was transferred to the Corps of Engineers on October 13, 1997.

For more information contact Melyssa Noe at 423-241-3315.

Shown here, Bechtel FUSRAP Program Manager Al Boos (third from left) presents a plaque for the achievement to DOE Oak Ridge Operations Manager James C. Hall. Also pictured are (from left) Joe Nemec, President of Bechtel Environmental Inc.; Bill Seay, Acting Director of DOE's Former Sites Restoration Division; and President of Bechtel National Inc., Lee McIntire.

Technology Applications at Portsmouth Providing Valuable Information

The process of identifying, testing, and implementing innovative technologies is a key component to the Department of Energy's Focus on 2006 plan. As a result of recent demonstrations of new technologies at the DOE's Portsmouth Gaseous Diffusion Plant, and the subsequent use of those technologies that are proven to be effective, Portsmouth is on track to complete all remediation work by the end of FY 2001. The demonstration of ground water and soil treatment technologies are providing extensive information to other Department sites and private industry.

Many of the Portsmouth technology applications projects are co-sponsored by the Department's Offices of Environmental Restoration (EM-40) and Science and Technology (EM-50) to evaluate the effectiveness of various technologies.

Workers install one of two parallel horizontal wells to form a recirculation network for the treatment of a mixed contaminant ground-water plume.

The Portsmouth technology applications, such as the passive ground-water treatment facility and the parallel horizontal wells, have been the subject of several technical and private industry publications. "Our goal is to communicate the results of these projects and share information with other sites who can benefit from the work that has been completed to date," said John Sheppard, deputy site manager of the Department's Portsmouth Office. "We have received excellent support from our regulatory agencies and DOE Headquarters for these technology demonstrations, and we believe the cleanup decisions resulting from these efforts can have a substantial effect on the overall mortgage reduction costs."

For more information contact John Sheppard at 614-879-5510 or Sandy Childers at 614-897-2336.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Portsmouth Technology Tour Draws Experts Nationwide

The U.S. Department of Energy hosted 109 visitors from across the country at the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio, on July 23-24, 1997, for an innovative technologies demonstration conference. The demonstrations and tour of the plant site were attended by staff from other DOE sites, State and Federal regulators, representatives from U.S. Air Force Bases, industries, and public stakeholders.

The conference included briefings on five different soil and ground-water treatment technologies being studied as part of the cleanup program. The tour provided participants with an opportunity to observe three technology demonstrations underway at locations on the plant site.

"Portsmouth has been in the forefront for technology development initiatives," said John Sheppard, deputy site manager for DOE's Portsmouth Site Office. "These studies are providing valuable information to assist in the cleanup efforts here and determine remediation techniques that can be transferred to other facilities.

Skip Chamberlain, representing the DOE-Headquarters Office of Technology Development in Germantown, Maryland, stated the conference provided "a chance to get the word out about the excellent work that is being done here, and get these technologies out to other sites."

Robert Siegrist (right), ORNL and Colorado School of Mines, explains the hydraulic soil-fracturing studies being conducted at the Portsmouth plant to attendees during the Innovative Technologies Tour.

For more information contact John Sheppard at 614-897-5510.

John Sebastian with the Tennessee Department of Environment and Conservation, DOE Oversight Office, Oak Ridge, Tennessee (left) and Steven Rock, U.S. Environmental Protection Agency's National Risk Management Research Laboratory in Cincinnati, Ohio, observe equipment used to passively treat ground water with reactive media.

Credits

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Fernald Completes Thorium Overpacking Project Ahead of Schedule

Working in an almost completely empty Thorium Warehouse, the last few remnants of radioactive materials were repackaged on May 20, 1997. A dedicated team of workers safely repackaged the last of approximately 5,600 deteriorated drums of radioactive thorium waste materials at the Department of Energy's Fernald Environmental Management Project (FEMP). Due to the deteriorated condition of these drums and the potential health threat associated with the waste, this project had been identified as one of the site's highest cleanup priorities by regulators, stakeholders, and the Department of Energy.

The two-year operation, targeted for completion in April 1998, was completed ten months ahead of schedule and under budget. The early completion translates into approximately $400,000 in direct cost savings.

"Most importantly, the DOE and Fluor Daniel Fernald achieved a worker exposure rate of less than half the original estimate by implementing numerous productivity improvements suggested by the actual workers in the field," said Jack Craig, DOE-FEMP Office Director. "As a result, what we realized overall was a safer project, a shortened schedule, and a significant cost savings to taxpayers."

William Muno, Regional Superfund Director for the U.S. Environmental Protection Agency (EPA), said, "This kind of work is consistent with Fernald's accelerated cleanup plan which combines cost-effective and aggressive remediation without compromising safety or regulatory guidelines. It is a significant step toward completing the overall project."

Tom Schneider, Fernald Project Manager for Ohio EPA, said Ohio EPA is pleased with

A lone worker in the now empty Thorium Warehouse removes the last of 5,600 deteriorated drums of radioactive thorium that were successfully repackaged for safe shipment and disposal off the Fernald site.

the success of the project. "Thorium residues at Fernald have been a major concern for Ohio EPA since our initial involvement with the site. We are pleased with the success of this project has achieved in addressing one of the most significant waste streams at the site in a safe, timely, and cost-effective manner,"

For more information contact Gary Stegner at 513-648-3153.

Fernald Conducts Successful Emergency Response Exercise

On May 20, 1997, the Department of Energy's Fernald Environmental Management Project (FEMP) conducted a successful joint emergency response exercise. The exercise tested the FEMP's emergency preparedness and emergency response capabilities working in conjunction with state and local agencies.

Emergency response teams from the FEMP and local communities took part in field activities in response to an emergency scenario reflecting an event that could occur at or near the Fernald site. The scenario involved a FEMP truck hauling thorium waste colliding with a local company's tanker truck carrying hazardous chemicals, spilling the contents of both vehicles and injuring both drivers.

This exercise differed from those in years past in two respects. It was held offsite to simulate a transportation incident in which the FEMP was not in command, and it involved private companies. "Combining resources with our neighbors helped reduce the individual costs of the exercise while satisfying all of our individual requirements," said Jack Craig, Director of the DOE-FEMP Office.

"The potential for an actual event having off-site impact has been significantly reduced at the FEMP since chemical inventories used during the former uranium production mission have been removed from the site," Craig added.

For more information contact Gary Stegner at 513-648-3153.

Native American Remains Re-Interred at Fernald Site

On May 25, 1997, Native American remains and associated artifacts dating back 950 years were interred on Fernald property—protected Federal land—during a sacred ceremony performed by representatives from several Tribes. The discovery of these historical remains and artifacts during a 1994 construction project, and the series of events that followed the discovery, have resulted in a true success story for the Fernald Environmental Management Project and several Native American Tribes.

"Today is a day for celebration. Today our ancestors can begin their journey home," said Chief White Bear during the ceremony that culminated a three-year collaborative effort on the part of the Department, several Native American Tribes, and Joe Schomaker, the FEMP's Manager of Cultural Resources and coordinator of the event. "Our goal was to honor the wishes of the Native Americans," Schomaker said. "It was challenging because we couldn't link these remains to a specific Tribe so we had to coordinate our efforts with several Tribes. One thing they all agreed upon was that they wanted the remains reburied—not put on display in a museum."

The Native American remains—which included an adolescent boy and his dog—were discovered on private property during installation of pipelines for a public water supply project. Partial remains of approximately 20 more people and numerous artifacts were also found. The interment of these remains on Federal land was advantageous for the Tribes because stricter guidelines apply for the protection of historical remains on Federal property.

National Park Service spokesperson Tim McKeown said he believes the May 25 ceremony marked the first in-ground curation in the State of Ohio. Because the specific Tribe of origin could not be determined, the customs of several Tribes were incorporated into the ceremony, which included singing, drumming, white sage burning, and gift offerings. "This is a great day. Our people can rest now," said Bill Satori, one of the spiritual leaders who presided over the curation. Jack Craig, Director of the DOE-FEMP Office, commented, "This event is a shining example of Native American Tribes and the U.S. Government working collaboratively to determine the best possible solution for protecting the remains while not impeding the cleanup in progress at Fernald."

For more information contact Gary Stegner at 513-648-3153.

Joe Schomaker (left), Cultural Resources Manager for Fluor Daniel Fernald, talks about the reburial of Native American remains and associated artifacts with Robert and Helen Griffin of the Shawnee Tribe.

Cost Analysis Shows Improved Productivity, Savings

It's not everyday a backpack makes headlines. However, when the backpack keeps site workers on the job for two hours at a time and actually costs nearly 50% less than the competing technology, it begins to attract attention. Discussions were held recently between the office of the Waste Management Science and Technology Team (STT) and Dr. John Lee of the Oakland Operations Office to explore the idea of demonstrating advanced worker protection systems technology at Oakland.

An STT cost analysis report studies cost alternatives for Waste Management applications of the advanced worker protection system (AWPS). The report showed that the (AWPS), a worker life-support technology in development, could result in significant productivity savings over the self-contained breathing apparatus (SCBA). The heart of the AWPS is a life-support backpack that uses liquid air to provide cooling air as well as breathing air to the worker. The backpack is combined with protective garments, a liquid cooling garment, a respirator, and communications equipment. Designed to enable workers to stay on the job for up to two hours, the protection system is being

Cost Analysis, *continued on page 19*

Mixed Waste Focus Area's Quick Win Program Helps Sites with Unique Mixed Waste Problems

The Quick Win program, a facet of the Department of Energy's Mixed Waste Focus Area, has been markedly successful in achieving the goals of its organizers. They envisioned not only a successful technology demonstration, but also the quick cleanup of small unique quantities of mixed waste.

Managed at the Department's Idaho National Engineering and Environmental Laboratory, the Mixed Waste Focus Area's Quick Win program is an innovative effort to demonstrate and deploy mature technologies to treat mixed waste at Department sites nationwide. By the end of FY 1997, the annual $2.4 million Quick Win program will have helped 14 sites reduce their mixed waste inventories by treating a total of 653 cubic meters of mixed waste. In addition, 10 of the 27 projects funded over the last two years are expected to continue treating mixed waste at various sites.

Pantex Quick Win

Among the "quick wins" is a project to treat high explosives at the Pantex Plant in Amarillo, Texas. The technology was funded because customers were looking for an alternative to open burning of the dismantled materials. "Certainly, it [the Quick Win program] has been extremely beneficial to us," said Vincent Zebrowski, a focus area customer in the DOE Amarillo Area Office. Zebrowski calls the project the "most promising of alternatives" that otherwise would have lacked funding for testing this year had it not been pegged as a "quick win." The funding enabled researchers to study the technology's capabilities as well as its pitfalls while the technology neutralized 500 pounds of contaminated high explosives. Zebrowski remains confident that the technology can be modified and fully implemented at Pantex.

Los Alamos Quick Win

At Los Alamos, a "quick win" technology is being credited with saving more than $1 million in storage, transportation, and offsite treatment costs. The process uses electrochemical methods to remove the hazardous component of mixed waste. Ninety drums were treated with this technology under a "quick win" demonstration, and the project proved so successful the lab applied for a permit to build a mobile treatment facility to treat even more mixed waste. Researchers estimate as much as 30 percent of the mixed waste generated by Los Alamos and Sandia labs annually could be treated with this technology.

"It [the technology] is often viewed as too expensive, but by the same token, this gives us an opportunity to save money," said Juan Corpion, who managed the storage area for this waste at Los Alamos. "It's marketable, too. The technology could be used at any site generating heavy metals."

Fernald Quick Win

At the Department's Fernald plant, the Quick Win program funded a technology to treat some 2,500 55-gallon drums of radioactive and hazardous sludges, soils, and debris left over from the site's work processing uranium for nuclear reactors during the Cold War. The technology, developed by Terra-Klean Response Group, Inc., Del Mar, California, cleaned up 15 percent of Fernald's tri-mixed waste. Eventually, the technology will be used to treat the entire inventory.

"It was a new way of doing business," said Jay Roach, who manages the program for the focus area. Roach said the idea was to seek solutions for the lower priority customer-identified mixed waste problems, or "low-hanging fruit," that could be addressed in a relatively quick timeframe. Other criteria mandate that the technology must be low cost and demonstrated within a given fiscal year.

For more information contact Ron Fontana at 208-526-5015.

Cost Analysis, *continued from page 18*

developed by Oceaneering Space Systems and funded by the Office of Science and Technology, Decommissioning and Decontamination Focus Area.

Waste Management has the responsibility for waste storage, treatment, and disposal, and this work requires different levels of worker protection. For the most restrictive Level A personal protection requirements, the STT cost analysis results show AWPS costs to be about 50 percent less than costs for the SCBA. For the somewhat less restrictive Level B requirements, costs for both technologies are approximately equal.

However, key to the analysis is a conservative ten percent productivity savings for AWPS due to the lengthy, two-hour, uninterrupted use duration. Oceaneering believes the actual productivity savings will be significantly higher. As a result, a sensitivity analysis was performed to test productivity savings limits. For Level A, results show AWPS cost could be reduced to about 30 percent of SCBA costs. For Level B, AWPS cost could be reduced to approximately 50 percent of SCBA cost.

Technology development of the AWPS is well underway and, when commercialized, offers the potential for improved labor productivity and significant cost savings.

For more information contact Edward Rizkalla at 301-903-7475.

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RECLAIMING THE PAST TO SECURE THE FUTURE

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

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DOE Responds to NAS Recommendations

The Department of Energy's Carlsbad Area Office is taking action on several recommendations made recently by the National Research Council of the National Academy of Sciences (NAS) to enhance confidence in the long-term performance of the Waste Isolation Pilot Plant (WIPP).

Carlsbad Area Office Manager George Dials outlined the Department's progress on the recommendations during a November 22 meeting in Albuquerque, New Mexico, with members of the NAS WIPP Committee. "The Department places great value on the nearly 20 years of scientific and technical oversight provided by the NAS," said Dials. "The DOE is committed to providing timely feedback to the panel members on our resolution of their recommendations to further ensure the long-term performance of the WIPP."

Released in October, the National Research Council's report, titled *The Waste Isolation Pilot Plant: A Potential Solution for the Disposal of Transuranic Waste*, expresses NAS' confidence in the WIPP's ability to protect the public health and the environment for thousands of years. However, the National Research Council also makes several recommendations tied to reducing the consequences of potential future human intrusion during the 10,000-year regulatory period prescribed by the U.S. Environmental Protection Agency (EPA).

The National Research Council's major recommendations and the Department's responses follow.

Recommendation: Speculative scenarios of human intrusion should not be used as the primary basis on which to judge the acceptability of the WIPP.
Response: The Department agrees with this recommendation. However, EPA requires the Department to review all credible human intrusion scenarios. Only human intrusion might lead to a release of radioactivity, yet as the committee states, none of the scenarios results in a release above regulatory limits.

Recommendation: Laboratory and onsite research programs could show that the potential is minimal for radioactive elements to dissolve in brine water and migrate beyond the repository boundary as a result of human intrusion
Response: Experimental and field programs show that key parameters are well within the range required to reduce the impacts of human intrusion. Test results are included in the Compliance Certification Application submitted recently to EPA. Ongoing studies of solubility and migration will further support the Department's positions stated in the application.

Recommendations, *continued on page 3*

Pollution Prevention Reduces Waste and Saves Money

The Department of Energy has substantiated the claim that pollution prevention can have a significant impact on cleanup operations. Most environmental professionals agree that restoration activities, by nature, will manage large volumes of waste resulting from cleanup operations, and this waste must be dispositioned. The Department has found that the final volume of waste actually disposed in a landfill or disposal facility can be greatly reduced by applying pollution prevention and waste minimization strategies. Early application of these strategies maximizes the reduction in the volume of wastes to be managed and decreases the cost of waste management.

More than 2.3 million cubic feet of waste materials from Department sites was avoid-

Prevention, *continued on page 14*

In This Issue...

DOE/EPA Workshop Promotes a Viable Streamlining Approach 2

Portsmouth Converts Sludge Lagoons to Prairie Ecosystem 4

Mixed Waste Vitrification Begins at Savannah River 6

Oakland Completes Geothermal Test Facility Brine Pond Restoration 7

FUSRAP Wins Tennessee Quality Award.....13

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DOE/EPA Workshop Promotes a Viable Streamlining Approach

A new environmental restoration workshop, jointly sponsored by the Department of Energy (DOE) and the Environmental Protection Agency (EPA), is currently being offered at sites as a precursor to the initiation of project-specific reviews intended to ensure the best technical approaches, priorities, and schedules are implemented in support of the 10-year plan objectives. The principles promoted in this workshop evolved out of the joint DOE/EPA Streamlined Approach for Environmental Restoration (SAFER) pilot projects and Strategic Milestone Reviews conducted in Fiscal Years 1995 and 1996.

Through the application of these environmental restoration principles, the Department, EPA, and State Remedial Project Managers have successfully accelerated schedules and reduced project costs at several facilities across the complex. The workshop is used to bring together, in an informal atmosphere, DOE, EPA, and State personnel with direct responsibility for the technical management of environmental restoration projects at a given facility. Group exercises and case studies based on previous site experiences are then used to reinforce a results-oriented way of defining problems and likely solutions, looking at uncertainty from a pragmatic point of view and converging on remedies with confidence as a decision-making team.

DOE/EPA's Principles of Environmental Restoration

- Creation of an effective project team is essential.
- Clear, concise, and accurate problem identification and definition are critical.
- Early identification of likely response actions is possible, prudent, and necessary.
- Uncertainties are inherent and will always need to be managed.

To date, workshops have been held at Savannah River, Oak Ridge, and Idaho to kick off peer reviews—an initiative implemented by Environmental Restoration's Deputy Assistant Secretary Jim Owendoff to facilitate inter-site communication and assist sites in identifying opportunities to streamline projects through collaborative, strategic thinking about site problems and their solutions. These peer reviews, which are conducted jointly with the DOE project teams and their respective EPA and State regulators, are tailored to the specific site problems

Workshop, *continued on page 3*

Idaho/ Albuquerque Cooperative Effort Saves Equipment Costs

Under a Memorandum of Agreement (MOA) with the Idaho National Engineering Laboratory (INEL), the Albuquerque Operations Office's Los Alamos National Laboratory (LANL) saved about $381,000 in cleanup costs during the last fiscal year. The MOA facilitated the loan of concrete crushing equipment from INEL.

The EXCEL 1500 Series concrete crusher was transported to LANL from INEL in March 1996, and the equipment was used to pulverize about 2,000 tons of releasable concrete that was disposed of onsite. This resulted in substantial savings to the Department of Energy and avoided the need for the Department to purchase duplicate equipment. As an additional cost savings to LANL, INEL provided transportation, training, startup personnel, and maintenance on the concrete crushing equipment.

For more information contact Andy Mikkola at 208-526-0725.

INEL's EXCEL 1500 Series concrete crusher.

Some key components of the WIPP legislation signed by President Clinton on September 23, 1996, include:

- EPA will continue as the primary regulator of the WIPP. Removing bureaucratic delays does not infringe on the stringent regulatory requirements the Department must meet to open the WIPP.
- EPA will have one year to review the Compliance Certification Application that the Department submitted on October 29, 1996.
- Upon EPA certification (expected in October 1997), the Department will begin shipping transuranic waste in November 1997 (instead of April 1998).
- Exempts the Department from the requirement to meet the "no migration" standard in the Resource Conservation and Recovery Act. EPA agrees that the requirement is redundant to the more stringent radioactive waste disposal criteria, and that the exemption will not jeopardize the environment nor the public health and safety.
- Beginning in 1997, New Mexico will receive $20 million annually for 15 years. The money will be used for infrastructure and road improvements.

Recommendations, *continued from page 1*

Recommendation: Implementation of engineered options (compartmentalization of disposal rooms and treated backfill material) could substantially reduce the consequences of human intrusion.
Response: The Department completed studies considering a large number of actions that could provide additional assurance against the consequences of human intrusion. As a result of these studies, panel seals and magnesium oxide as a backfill material have been chosen to control disposal room chemistry and to provide added assurance that the WIPP will comply with regulatory requirements.

"The results of these NAS committee suggested actions are already included in the Compliance Certification Application we submitted to the EPA on October 29, 1996. Ongoing scientific study programs also will enhance regulator and public confidence in the WIPP and will reduce any uncertainty in our compliance calculations," Dials said. "These programs focus on hydrology, chemistry, room seals, and rock mechanics, and overall performance assessment."

Future experiments will focus on maintaining compliance for recertification by EPA every five years during disposal operations.

Beyond that, the Department will continue its work on the national and international levels to share technological developments that will assist in addressing the nuclear waste problem on a global basis.

The WIPP, which is designed to permanently dispose of radioactive transuranic waste left from the research and production of nuclear weapons, is scheduled to begin waste disposal operations in November 1997, pending EPA approval.

For more information contact Patty Baratti-Sallani at 505-234-7313.

Workshop, *continued from page 2*

being addressed while relying on the environmental restoration principles as a foundation for the technical evaluations that follow.

A national workshop is scheduled for January 14-15, 1997, in Albuquerque, New Mexico, to bring together DOE, EPA, and State representatives from across the country to identify opportunities where the principles could be applied at specific projects within the DOE complex.

For specific information on the Principles of Environmental Restoration workshop, or to discuss possible technical assistance in conducting a peer review, please contact Steve Golian in the Office of Program Initiatives at 301-903-7791 or Rich Dailey in the Office of Environmental, Safety, and Health at 202-586-7117.

EM Signs Innovative Recycling Policy

On September 20, 1996, the Department of Energy's Office of Environmental Management (EM) signed a demonstration policy for recycling radioactively contaminated carbon steel resulting from decommissioning activities within the EM Program. The policy, which was developed with extensive stakeholder input, specifically recognizes that EM has a tremendous opportunity to minimize the disposal of contaminated metals as waste by recycling it into disposal containers.

The policy further recognizes EM's demand for disposal containers and its role as the major generator of radioactively contaminated steel. The policy goes on to state that "effective immediately, it is EM's policy—to the degree that it is economically advantageous and protective of worker and public health—to recycle radioactively contaminated carbon steel either in storage or to be generated in the future. This policy is fully supportive of the various site-specific recycling initiatives underway or planned and will be in place for three years from the date of the memorandum, at which time it will be reevaluated."

When the Department decided in 1994 to develop this recycling policy, it invited stakeholders to provide early input into

Recycling *continued on page 13*

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Portsmouth Converts Sludge Lagoons to Prairie Ecosystem

After just two months of construction, three lime sludge lagoons, spanning 18 acres northeast of the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio, have been dewatered and covered with soil, and are being converted to a prairie ecosystem and wetland.

The sludge lagoon conversion is the first Corrective Measures Implementation project under the Resource Conservation and Recovery Act at Portsmouth. In February 1996, the Ohio and U.S. Environmental Protection Agencies held a public meeting on the project, and by June the agencies had issued their Decision Documents. Construction was initiated on July 17.

This aerial photograph shows the X-611A lime sludge lagoons on the northeast side of the plant as they looked prior to remediation efforts.

On September 30, 1996, the first phase of the project was completed on schedule. This involved pumping off nearly 85 million gallons of water from the lagoons and disposing of the water in accordance with the plant's National Pollutant Discharge Elimination System outfall permit criteria.

Once the lagoons were dewatered, workers placed nearly 100,000 square yards (or 12 miles of seam) of hand-sewn, geotextile fabric over the sludge to stabilize it for a soil cover. A 2-foot-deep anchor trench was dug around the lagoons, and the edges of the fabric were locked in place. Workers then placed more than 12,000 truckloads of dirt perpendicular to the fabric in a "fingering" method, allowing space between rows and ensuring uniform pressure across the entire area. Soil was then placed between the fingers and graded to a minimum of 2 feet deep.

Winter rye was planted in the soil to provide temporary winter erosion control. In April 1997, the final phase of the project will be completed to convert the area to a prairie habitat. The existing vegetation will be tilled, and Southern Ohio prairie grasses will be planted in its place. Once the prairie grasses are established, the area will be mowed once a year, and one third of it will be burned each year to maintain the prairie. A small portion of the former lagoons will be left to develop naturally into a wetland area.

"This effort could not have been accomplished had it not been for the Decision Team process at Portsmouth, allowing for expedited reviews at key decision points," said Jim McMaster, Lockheed Martin Energy Systems project manager. The Decision Team consists of the project coordinators from the Department of Energy's Portsmouth Site Office and the

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Ohio and U.S. Environmental Protection Agencies. The team was established in 1994 to cost-effectively address issues as soon as they are identified and to accelerate remedial decisions.

The lagoons collected waste lime from the water treatment plant between 1954 and 1960. For a short period from 1956 to 1957, chromium-laden sludge from cooling water used in the uranium enrichment process was disposed in the lagoons. Chromium had been added to the cooling water as a corrosion inhibitor. The plant now uses a nonhazardous, phosphate-based corrosion inhibitor.

For further information contact John Sheppard at 614-897-5510 or Sandy Childers at 614-897-2336.

Workers begin placement of the geotextile fabric over the sludge. This is enough fabric to cover 20 football fields.

This photo shows the lagoons after completion of Phase I, at the end of September.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Savannah River Successes

Savannah River to Begin Closing High-Level Waste Tanks

With the vitrification of high-level radioactive waste beginning in March 1996, the Savannah River Site's Defense Waste Processing Facility started the final process in the Nation's nuclear cleanup. The Savannah River Site is transferring that momentum to another first-of-its-kind milestone—the closure and stabilization of high-level radioactive waste storage tanks.

Approximately 34 million gallons of high-level radioactive waste are stored in 51 underground waste tanks at the Savannah River Site. Working closely with the South Carolina Department of Health and Environmental Controls and the Environmental Protection Agency, the Savannah River Site developed closure criteria and a High-Level Waste Tank Closure Plan for all 51 tanks on the site.

An Environmental Assessment was also conducted in accordance with the National Environmental Policy Act to evaluate potential impacts to the public, the workers, and the environment of the proposed actions and alternatives for tank closure. Also, stakeholders and the general public have been involved from the onset via numerous meetings and briefings with the Savannah River Site Citizens Advisory Board and a public informational meeting held on June 11, 1996.

The regulators and the public are very supportive of tank closure. "We need to get on with it," Lee Poe, a member of the SRS Citizens Advisory Board, told the *Aiken Standard* at the public informational meeting. "The plan is very conservative, and it provides for the protection of the safety and health of the public." The Savannah River Site is currently discussing the waste classification of residual tank waste with the Nuclear Regulatory Commission.

The Savannah River Site plans to close three high-level radioactive waste tanks in 1997, starting with Tank 20 in F-Area. The site's Ten Year Plan envisions closure and stabilization of 20 of the 24 single-shell high-level radioactive waste tanks by 2006. By the year 2018, the remaining legacy high-level radioactive waste will be removed and stabilized.

For more information contact Larry Ling at 803-208-8248.

Mixed Waste Vitrification Begins at Savannah River

On October 18, the Savannah River Site began turning mixed radioactive and hazardous waste into a glass form for safe storage. This process, called vitrification, helps to stabilize the waste and reduce its volume.

The mixed-waste contract is the first Department of Energy commercial contract involving glassification of low-level mixed waste. GTS Duratek, a Maryland-based radioactive and hazardous waste management company, is handling the project.

The 670,000 gallons of mixed waste are currently stored in 2 above-ground, 500,000-gallon tanks and in 125 drums, all in M Area. This waste has accumulated in the past from the fabrication of fuel and targets for use in site reactors. Converting the mixed waste to a glass form is expected to take about 12 months to complete.

The vitrification process produces highly durable glass pellets that resemble flattened marbles. The pellets will be stored inside 71-gallon square drums. Besides stabilizing the waste, the vitrification process also reduces its volume by about 75 percent—from 670,000 gallons of liquid to less than 170,000 gallons of glass.

For more information contact Dave Williamson at 803-557-3928.

Savannah River Removes 40 Tons of Solvent Contaminants

Between October 1995 and August 1996, the Savannah River Site removed over 80,000 pounds of chemical solvent contaminants through the operation of three ground-water treatment facilities and five soil vacuuming units, as well as several demonstration projects.

The combination of treatment methods mean 5 tons of solvent—compared to less than a ton previously—are now being removed from the area each month. This improvement over last year's performance is due to increased efficiency, availability of soil and ground-water remediation facilities, and continued research and development activities.

The ground-water facilities currently in operation have removed more than 340,000 pounds of organic compounds from more than 2.3 billion gallons of ground water during the past 10 years of operation.

For more information contact Mike Simmons at 803-725-1627.

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SRS Spent Fuel Program Quietly and Safely Revived

Despite a long and sometimes controversial process to renew the United States' policy of taking back U.S. origin highly enriched spent fuel rods from foreign research reactors, the "Reduced Enrichment for Research and Test Reactors program" was quietly revived on September 22, 1996.

And that was good for the Department of Energy, and in particular, the Savannah River Site, the Department facility identified by Energy Secretary Hazel O'Leary to receive over 17,000 aluminum-clad spent nuclear fuel elements from foreign research reactors over the next 13 years.

Although the Savannah River Site had a history of safely receiving and storing spent nuclear fuel from foreign and domestic research reactors since 1963, heightened public and political concern over bringing additional spent nuclear fuel to the site made it necessary to have a successful and safe first shipment.

"Everything went as planned. We got the ships in and tied up and all the inspections were done faster than we had originally projected. Everything went very smoothly because of the teamwork and planning by the Department, the Savannah River Site, the Naval Weapons station, South Carolina agencies, and other Federal agencies," said Jim Giusti, DOE Savannah River Office of External Affairs.

Five countries participated in the first shipments: Germany, Sweden, Columbia, Switzerland, and Chile. Together, the cargo bound for the Savannah River Site included 8 casks of 281 spent nuclear fuel assemblies (rods). The casks were received at the Naval Yard in Charleston, South Carolina; from there, they were loaded and trucked to the Savannah River Site about 150 miles away.

The shipment of foreign research reactor fuel will continue until 2013, with the second shipment planned for early 1997. The remaining foreign spent fuel will come from 34 different countries including Australia, Japan, and South Korea.

For more information contact Mary Flora at 803-952-6852.

Oakland Completes Geothermal Test Facility Brine Pond Restoration

The Department of Energy's Oakland Operations Office has successfully completed the restoration of the Geothermal Test Facility Brine Pond. This project involved removing and disposing of about 21,500 tons of soil waste contaminated with naturally occurring radioactive material components and elevated levels of arsenic. The waste was safely disposed of at an offsite facility specially designed and regulated for this purpose.

Located 140 miles east of San Diego, the Geothermal Test Facility is an 82-acre site that was formerly used by the Department to perform studies for geothermal power generation. A 6-acre, PVC-lined brine evaporation pond was installed in 1972 to store geothermal process water. Residues and precipitates from the fluids resulted in the deposition and concentration of contaminants at the base of the pond. The contaminants were concentrated in the brine pond as a result of the evaporation process during past facility operations. Brine pond restoration activities began in September 1996 and were completed in November 1996 at a cost of $2.9 million.

Restoration efforts were accelerated as a result of the Environmental Management Small Sites Initiative. This initiative focuses technical and financial resources at the smaller cleanup sites, reducing mortgage liabilities and overall project costs.

For more information contact Hemant Patel at 510-637-1568.

Oakland Operations Office personnel observe the last shipment of contaminated material as it is removed from the Geothermal Test Facility. From left to right: Jim Turner, Oakland Operations Office Manager; Hemant Patel, DOE-EM Project Manager; Doug Ash, Oakland Operations Office Chief of Staff; Doug Tillman, U.S. Army Corps of Engineers.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Rocky Flats Meets Major Milestones

Rocky Flats is continuing to make significant progress in stabilizing and consolidating special nuclear material; removing hazardous waste from the site; and further reducing risk to workers, the public, and the environment. The following activities comprise some of the major milestones completed at Rocky Flats this year.

Venting of Solid Residue Drums.

Rocky Flats completed the venting of 2,696 solid residue drums 9 months ahead of schedule. The residue drums were vented to prevent hydrogen gas buildup from the contents of the drums and to further reduce risk to workers. Typical residue materials in the drums include metal, glass, graphite, crucibles, chemical processing salts, combustibles, filters, gloves, incinerator ash, and sludge.

Draining and Removal of HEUN Solutions from Building 886.

Rocky Flats completed the removal of 2,700 liters of Highly Enriched Uranium Nitrate (HEUN) solutions from Building 886, a former research facility. This is a major step forward in reducing risks for Rocky Flats workers and in cleaning up the site. The bottled HEUN solutions will be shipped to Nuclear Fuel Services in Erwin, Tennessee, where they will be converted into a stable oxide form and eventually used as fuel for government research reactors. In addition, Rocky Flats contractors working together on this project clearly demonstrated how the integrated Management Contractor concept can work. Six different subcontractors had to work together to successfully complete this project. The removal of the HEUN solutions clears the way for further deactivation and ultimate decommissioning of Rocky Flats.

Transfer of Beryllium Offsite.

The shipment of 17,000 pounds of beryllium was completed in September. Consisting primarily of classified weapons parts, the beryllium was shipped to Brush Wellman in Elmore, Ohio, where the parts will be converted for the Idaho National Engineering Laboratory to use in its Advanced Test Reactor. An additional 31,000 pounds have been packaged and are awaiting shipment to Ohio.

Demolition of Building 889.

Building 889 was the first nuclear facility at Rocky Flats to be demolished. Workers removed uranium contamination from the building walls and floors and asbestos from the roof of the facility before it was demolished. Originally constructed in the late 1960s, Building 889 was used as an equipment decontamination and repackaging facility for depleted uranium and beryllium manufacturing operations.

Trenches T-3 and T-4 Excavation.

Excavation of Trenches T-3 and T-4 was completed in September. Approximately 1,706 cubic meters of contaminated material were excavated from T-3, and 2,090 cubic meters of contaminated material were excavated from T-4. The trenches were a potential source of volatile organic compound and radionuclide contamination to ground water.

Demolition of Oil Tanks.

Decommissioning, dismantlement, and removal of two oil tanks were completed in August. Removal of these tanks eliminated a potential source of contamination. The tanks were constructed in the mid-1950s and initially served as the fuel source for the steam plant. They were later retained as backup when natural gas was installed.

Underground Storage Tank Source Removal Project.

The cleaning and foaming of the underground storage tanks were completed on September 23. All contaminated materials in the tanks were removed and treated using onsite treatment facilities. The tanks were rinsed and filled with closed-cell polyurethane foam to prevent surface or ground-water infiltration. This was an interim closure action. The tanks will undergo final closure when their associated buildings are decontaminated and decommissioned.

Shipment of Saltcrete for Offsite Disposal.

Shipment of Saltcrete for offsite disposal was completed in April. Several thousand cubic feet of low-level mixed waste, in the form of Saltcrete, were shipped offsite. The Saltcrete was previously stored in Tent 12 on the 750 Pad. This tent is now empty.

Removal of Stored Waste and Solid Residues from Building 779.

All stored waste and solid residue were removed by September 30, and Building 779 is being prepared for demolition.

Disposal of 48 Reactive Chemicals.

Disposition of "priority one" reactive chemicals was completed in July, two months ahead of schedule. These chemicals were generally shock-sensitive or explosive and presented a high safety and health hazard.

Interim Soil Action Levels Set.

The Rocky Flats Cleanup Agreement has taken one more step down the road to an effective and efficient cleanup with a decision on interim soil action levels for radioactive contamination. The decision, announced on October 18, set the dose

Rocky Flats, *continued on page 9*

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Rocky Flats, *continued from page 8*

level for radioactive contamination at Rocky Flat's soil and the methods to calculate the amount of radioactivity in soils that would yield that dose. As in all action levels, any contamination below that level would not have to be dealt with. This action level ensures that no member of the public will receive a radiation dose greater than 15 millirem per year and that land-use controls would be maintained to meet this level.

Much work remains at Rocky Flats as facilities are deactivated, decontaminated, and decommissioned, and cleanup plans are implemented. The site will continue to work aggressively to complete other major milestones, further reduce risk, and move toward site closure.

For more information contact Liz Wilson at 303-966-3655.

Rocky Flats Hosts International Visitors

On November 6 and 7, 1996, Russian officials and observers from the International Atomic Energy Agency (IAEA) visited Rocky Flats to examine how IAEA safeguards for weapon-origin fissile materials have been implemented at U.S. plutonium facilities.

The group, numbering approximately 30, included 10 officials from the Russian Federation Ministry of Atomic Energy, 5 IAEA observers, various staff from Department of Energy Headquarters and other Department facilities, and their interpreters. The focal point of the visit was the Material Access Area of Building 371, the location of the neutron multiplicity counter and gamma spectrometer. The group also got a glimpse inside the Special Nuclear Material vault. Prior to this visit, the IAEA had completed its annual physical inventory of special nuclear material stored there. A bus tour of the protected area rounded out the visit.

The group has also visited the Hanford Site and Argonne National Laboratory-West for a demonstration of remote monitoring activity. The tour followed a September conference in Vienna between Secretary O'Leary, her Russian counterpart, and the director general of the IAEA concerning the practical application of verification of fissile materials.

For more information contact Liz Wilson at 303-966-3655.

Rocky Flats Waste Inventory Shrinks in 1996

Waste shipments leaving the Rocky Flats Environmental Technology Site in Fiscal Year 1996 exceeded the amount of waste generated onsite for the first time since nuclear weapons production ceased in 1989. The volume of low-level mixed waste onsite was actually reduced by approximately 4.5 percent in Fiscal Year 1996.

"Kaiser-Hill has successfully kept pace with the new waste generated this year by consistently shipping waste offsite so we actually have less waste onsite now than we did at the beginning of Fiscal Year 1996," said Tim Hedahl, Kaiser-Hill manager of Environmental Restoration and Waste Management. "This accomplishment demonstrates the commitment of the Kaiser-Hill team to the closure of Rocky Flats in 10 years. Removing waste from the site is a visible sign of the progress we are making."

A total of 40,395 cubic feet of low-level mixed waste, 74 truckloads, was shipped offsite during Fiscal Year 1996. These shipments fulfilled a Rocky Flats Cleanup Agreement milestone developed by the Department of Energy, the Environmental Protection Agency, and the Colorado Department of Public Health and Environment.

The shipments consisted mainly of Saltcrete, a cemented processed waste salt. Additional waste shipments included low-level waste (3,072 cubic feet), hazardous waste (3,213 cubic feet), nonregulated hazardous waste (6,179 cubic feet), and polychlorinated biphenyls (10,311 cubic feet). Other significant offsite shipments included 53,049 pounds of excess beryllium left over from past weapons production operations to Brush Wellman in Elmore, Ohio; 12 shipments of weapons components and enriched uranium to 3 other Department facilities; and 22 pieces of Stockpile Reliability Equipment shipped to Los Alamos National Laboratory to support the weapons mission there.

For more information contact Lara Ramsey at 303-966-3463.

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INEL Innovations

INEL Celebrates Five Years of Cleanup Activities

The Idaho National Engineering Laboratory (INEL) has completed the first five years of cleanup under a 1991 agreement between the Department of Energy, the Idaho Operations Office, Region 10 of the Environmental Protection Agency, and the State of Idaho Department of Health and Welfare.

December 9, 1996, marked the five-year anniversary of the INEL Federal Facility Agreement and Consent Order, the document that guides cleanup activities at INEL. In the last five years, INEL has cleaned up sites containing asbestos, petroleum products, acids and bases, radionuclides, unexploded ordnance and explosive residues, polychlorinated biphenyls, heavy metals, and other hazardous wastes. The Department of Energy is continuing to follow the schedule outlined in the document as the comprehensive investigations begin.

Since the agreement was signed, the Department of Energy, the Environmental Protection Agency, and the State of Idaho have completed 4 of 5 remedial actions and 181 of 207 limited field investigations, and have signed 14 of 23 Records of Decision. Three ongoing significant projects involve the removal and treatment of organic vapors beneath the Radioactive Waste Management Complex, the excavation and treatment of buried mixed transuranic waste from Pit 9, and the pumping and treatment of contaminated ground water from beneath the Test Area North.

"I think some of the success we've had here can be attributed to the positive working relationship between the three agencies," said Nolan Jensen, who heads the Environmental Restoration Program for DOE-Idaho. "The Department of Energy has a positive, outcome- oriented relationship with the regulators. Overall, the public has also been a strong supporter of our cleanup activities."

Since 1994, the Environmental Restoration Program has spent more money on actual cleanup activities than on assessment. For Fiscal Year 1997, the program will spend 75 percent of its budget on cleanup projects and interim and removal actions. The remaining 25 percent will be spent on assessment and program direction and support.

Despite the successes, the agencies have a significant challenge ahead—what to do with the millions of cubic feet of radioactively and organic-contaminated waste buried at the Radioactive Waste Management Complex. A comprehensive remedi-

INEL, *continued on page 11*

Workers collect samples of radionuclide-contaminated soils prior to a removal action last summer. Contaminated soils were a result of spills, storage of surface-contaminated materials, and windblown contamination. Primary contaminants identified during this removal action were cesium-137, strontium-90, and europium-152.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

INEL, *continued from page 10*

al investigation/feasibility study is underway to determine if the wastes should be left in place, excavated, or isolated by a cap to be installed over the area. A decision is expected in 1998.

The last cleanup Record of Decision will be signed by the Department of Energy, the Environmental Protection Agency, and the State of Idaho in 2001. INEL is expected to be removed from the National Priorities List by 2006.

For more information contact Erik Simpson at 208-526-4700.

Construction is continuing on the Pit 9 retrieval and treatment facilities at the Radioactive Waste Management Complex. The Pit 9 project is a pioneering effort within the Department of Energy—the first privatized project in the Nation involving the cleanup of buried mixed transuranic waste. Excavation of buried waste from Pit 9 will take place within the retrieval facility (lower left). The waste will be stabilized in the treatment facility (middle of photo) where plasma arc melting will convert the waste to a molten mass resembling obsidian rock.

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INEL Recognized for Saving $20 Million

By eliminating unnecessary work at the Idaho Chemical Processing Plant, the Idaho National Engineering Laboratory (INEL) has been able to redirect $20 million to accelerate site cleanup and improve regulatory compliance. Energy Secretary Hazel O'Leary applauded this effort by presenting Vice President Gore's National Performance Review "Hammer Award" to John Wilcynski, Manager of the Department's Idaho Operations Office, on October 9, 1996.

In 1995, a team of representatives from DOE-Idaho and Lockheed Martin Idaho Technologies Company (LMITCO) evaluated the costs of operations at the Idaho Chemical Processing Plant, where spent nuclear fuel and high-level radioactive wastes are managed. The 20-person team, led by DOE-Idaho's Tom Wichmann, identified and recommended the elimination of unnecessary or redundant activities. Another LMITCO team evaluated and implemented the recommendations which, by the time of the award, had returned $20 million to the laboratory for reinvestment. Additional savings of $10 million a year are expected from streamlining work control procedures.

Three other INEL employees, Mark Arenaz of DOE-Idaho and Carlos Tellez and David Crandell of LMITCO, were also honored as contributing team members to the "Hammer Award" given to Don Pearman, DOE Assistant Secretary for Field Management. The team consolidated 13 DOE Orders, a total of 1,500 pages, into 1 performance-based order of only 14 pages.

For more information, please contact Ron Ramsey at 301-903-7981.

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Fernald Hosts Mixed Waste Treatment Demo

Terra-Kleen Response Group, Inc., is demonstrating a new technology at the Department of Energy's Fernald plant near Cincinnati, Ohio, that provides an alternative to incineration for treating mixed waste and tri-mixed waste. Mixed waste is material containing Resource Conservation and Recovery Act (RCRA) and radioactive contaminants; tri-mixed waste contains both RCRA and radioactive contaminants plus Toxic Substance Control Act (TSCA) contaminants.

The new technology, called Mobile Solvent Extraction, is being demonstrated under the Rapid Commercialization Initiative (RCI) that was developed to bring new technologies into commercial use. This process treats both mixed and tri-mixed waste by using a nonhazardous solvent to wash hazardous organics from soils, sludges, and debris. The contaminated solvent then passes through a recovery unit where 90 percent of the solvent is recovered and recycled, leaving about 10 percent for treatment and disposal. An added value of this new process is that it provides a safe alternative to incineration, which can leave unburned or partially burned intermediate products to potentially escape into the atmosphere.

The Terra-Kleen process holds the only nationwide TSCA permit for a nonthermal process to remove polychlorinated biphenyls (PCBs). The technology was previously demonstrated successfully through the U.S. Environmental Protection Agency (EPA) Site Program for the treatment of PCB-contaminated soils.

The Fernald demonstration is expected to be completed by mid-February, then through an additional contract, the Terra-Kleen equipment will treat about 9,500 cubic feet of the mixed and tri-mixed wastes and eliminate the entire waste stream at Fernald. The extraction process should be applicable for use at any DOE site that has PCB-contaminated radioactive wastes as well as radioactive wastes contaminated with hazardous substances.

The Mixed Waste Focus Area (MWFA), a national program managed at the Idaho National Engineering Laboratory, partnered with Fernald and Terra-Kleen to cofund this demonstration of the technology. The MWFA supported the project through its Quick Win Program, whose goal is to provide treatment technologies, either commercial or DOE developed, that can reduce the Department's mixed waste inventory in the near term.

Several government agencies are involved in the demonstration as the RCI project team: DOE, Department of Commerce, Department of Defense, EPA, and representatives from various State environmental agencies. The RCI is a government effort designed to identify and reduce barriers that impede market entry of new technologies.

The RCI program relies on a collaboration between Federal agencies and provides funding for State representatives from six States to work on a performance audit of the new technology. Those States are South Carolina, Ohio, Tennessee, California, Colorado, and Kentucky.

When the RCI participant receives approval from the project team representatives, the technology developer can proceed to permit its project or process in those States without going through separate lengthy and costly demonstrations in each State.

For more information contact Dennis Cook at 513-648-3820.

Investigations Completed at Fernald

The Department of Energy's Fernald Environmental Management Project (FEMP) has successfully completed the Remedial Investigation/Feasibility Study process, a key activity under the U.S. Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation and Liability Act program. A former uranium metal production facility, the FEMP is the first major site in the Department's weapons complex to complete this process.

"The investigations phase of the project is vital to the long-term environmental remediation effort. We have accurately defined the nature and extent of environmental contamination associated with the FEMP and, by involving the public, developed cleanup plans which have been approved by the EPA," said Jack Craig, director of the DOE-FEMP office.

For more information contact Gary D. Stegner at 513-648-3153.

Safe shutdown workers remove holdup materials from equipment and lines in preparation for building dismantling at the Fernald Environmental Management Project in Ohio.

Students Gain Experience Through FUSRAP Summer Program

The Department of Energy's Formerly Utilized Sites Remedial Program (FUSRAP) gave eight college students the opportunity to gain some hands-on experience this past summer. Most worked in Oak Ridge, Tennessee, but some took field assignments in such States as New York and Ohio.

David Horton was assigned to help with the FUSRAP site in Painesville, Ohio.

David Horton of Durham, North Carolina, is pursuing a degree in civil engineering from North Carolina A&T State University. "It's a very friendly environment here," said Horton, who worked as a co-op with FUSRAP's Missouri/Ohio team on the FUSRAP site in Painesville, Ohio. "People tend to be on the positive side, and there's a real sense of teamwork."

Brenda Perkovich of Eau Claire, Wisconsin, is pursuing a master's degree in environmental management at Duke University. She worked in special programs through a DOE fellowship and helped determine whether utility workers could encounter radiation near one of FUSRAP's sites. "I'm researching the types of radiation involved, the types of utilities, and other variables," Perkovich said. "After FUSRAP analyzes the data to see if there is any chance for workers to be exposed to radiation, they'll send the information to the utility boards.

Brenda Perkovich worked in special programs through a DOE fellowship.

Other students who worked with FUSRAP this summer include summer hires Keri Gusmann, Hiram College, and Tom Dugan, Erie Community College; interns Zel-Denise Jones from Tennessee State University, and Darren Stewart from Vanderbilt University; and co-op students Jared Johnson and Wayne Hastings from the University of Tennessee.

For more information contact Melyssa Noe at 423-241-3315.

Recycling, *continued from page 3*

the policy development process from the very beginning. From July 1994 through the end of 1995, stakeholders (including members of the public; State and Federal regulators; Department field and headquarters organizations; contractor personnel; and representatives of elected government, labor, and industry) were invited to identify key issues of concern and to provide input as the policy developed.

A copy of the policy can be obtained from the Department's EM home page (http://www.em.doe.gov, click on "Environmental Restoration" then on "Recycling in the EM Program") or from Stephen Warren (DOE/EM-43) via e-mail at stephen.warren@em.doe.gov.

For more information contact Stephen Warren at 301-903-7673.

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FUSRAP Wins Tennessee Quality Award

The Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP) has received the Tennessee Quality Commitment Award for 1996.

At a ceremony held on October 24, 1996, in Nashville, Tennessee, the award was presented to Former Sites Restoration Division Director Les Price of the Department's Oak Ridge Office and FUSRAP Program Guidance and Assessment Manager Janice Allison of Bechtel National, Inc.(BNI), the prime contractor for FUSRAP.

The Quality Commitment Award recognizes organizations that have shown a serious commitment to using total quality principles and have demonstrated a solid approach to system-level quality management. Although the 132 recipients of Tennessee Quality Awards for 1996 included other DOE-Oak Ridge Office organizations and other Department contractors, the FUSRAP award is unique in that it represents a joint application and collaborative effort of a DOE entity and its contractor support.

For more information call Melyssa Noe at 423-241-3315 or Al Johnson at 301-903-7226.

Janice Allison, BNI/FUSRAP, and Les Price, DOE/Oak Ridge, with the Tennessee Quality Award Plaque.

EMAB Offers Recommendations Regarding EM Strategic Integration and the Ten Year Plan

The Environmental Management Advisory Board (EMAB) recently made substantial recommendations regarding EM budgeting and management systems and the EM Ten Year Plan. The two recommendations were presented to EM Assistant Secretary Alm during a Board meeting on October 23, 1996.

During the public meeting, EMAB strongly commended the central goals of the Ten Year Plan, which include accelerating the cleanup program to reduce risk and cost, accomplishing remediation more efficiently, providing well-defined strategic goals, and streamlining management systems.

The Board also recommended that the Department reevaluate each site's Ten Year Plan on an annual basis to permit better public involvement, further define EM program objectives and responsibilities, and develop a consistent public involvement program for site-specific and intersite issues. Furthermore, it encouraged the Department to assure compliance with the National Environmental Policy Act by developing a new environmental impact statement or by identifying existing statements that may cover the relevant impacts.

For more information contact James T. Melillo, Special Assistant to the Assistant Secretary, at 202-586-4400.

Contest Yields Motto for *EM Progress*

Over the past three months, EM voters submitted their choices and the tally is in! The winning motto for the *EM Progress* newsletter is:

"Reclaiming the Past to Secure the Future."

After extending the voting deadline to allow additional time for subscribers to have a voice in this decision, *EM Progress* readers voted 8-7 to narrowly edge out the other motto contender:

"EMbracing Environmental Excellence."

The winning motto will be prominently featured in the *EM Progress* nameplate. Since the winning margin was so close, "EMbracing Environmental Excellence" will be used as a footer, appearing on alternating pages—justice dictates a measure of inclusiveness in this case.

We feel that both mottos speak to the heart of the EM program and should be kept in mind as we move about our daily work lives. We hope you find them worthy.

For more information please contact Dave Simon at 202-586-4253 or e-mail to David.Simon@em.doe.gov.

Prevention, *continued from page 1*

ed during fiscal years 1994 and 1995 by integrating basic pollution prevention strategies into environmental restoration. Most of the strategies were relatively simple, low-cost technologies, including segregation of wastes, equipment and material reuse, efficient waste packaging techniques, and innovative management practices. These methods were most effective when initiated during project planning stages and evaluated throughout the project's life cycle.

The techniques implemented by these sites are described in a DOE Office of Environmental Restoration report titled, *The Complex-Wide Study on the Successful Integration of Pollution Prevention into the Environmental Restoration Program, Volumes I and II.* Released in October 1996, the document details 92 case studies from 26 of the Department's environmental restoration sites. In addition, 19 out of 24 sites provided a summary of pollution prevention programmatic elements within their individual environmental restoration programs. The second phase of this two-phased project will focus on actual cost savings realized from these case studies.

The pollution prevention techniques detailed in the report fall into one of the following general categories:

- segregation of materials,
- recycling and reuse,
- source reduction,
- volume reduction, and
- best management practices (BMPs).

Segregation of materials involves separating wastes (i.e., low-level radioactive waste from hazardous waste) to avoid the higher costs associated with disposal and treatment of mixed waste. Recycling and reuse of materials avoids the costs associated with disposal of primary and secondary waste from cleanup activities (i.e., personnel protective equipment, plastic sheeting, decontamination media, innovative sampling techniques, packaging materials) through process changes. Volume reduction involves compacting, evaporating, shearing, or crushing waste to reduce its volume and

Prevention, *continued on page 15*

Prevention, *continued from page 14*

associated disposal costs. BMPs are management practices, operational changes, material substitutions, and conservation practices that are implemented at the management level to reduce the generation and disposal of waste.

Examples of pollution prevention successes documented in the report include:

- About 1,300 cubic feet of low-level radioactive waste piping and trash and 7 cubic feet of hazardous waste were segregated from mixed waste sludge and debris at Battelle Columbus Laboratories Decommissioning Project during decommissioning of King Avenue Buildings 2 and 5. This method helped reduce the high costs associated with disposal of mixed waste.
- About 300,000 cubic feet of clean concrete was reused, and 21,000 cubic feet of clean scrap metal was recycled at the Hanford Site during decommissioning activities at Building 190B.
- About 40,000 cubic feet of low-level radioactive waste and sanitary waste was avoided at the Idaho National Engineering Laboratory during decommissioning of Auxiliary Reactor Area 2. Strategies included compacting or shearing low-level radioactive waste to reduce volume and scabbing concrete to remove surficial low-level radioactive waste contamination in order to reuse the concrete in other applications.
- About 2,600 cubic feet of State-regulated material and 3,400 cubic feet of sanitary waste were avoided at the Los Alamos National Laboratory by field screening excavated soils and using clean soils as backfill during restoration activities at the Zia Motor Pool facility. In addition, 1,600 cubic feet of hazardous waste was avoided by using reusable bulk waste containers instead of drums to package waste.
- About 5,800 cubic feet of low-level radioactive waste was avoided at the Portsmouth Gaseous Diffusion Plant during subsurface soil and groundwater investigations. The plant used the "direct push" sampling technology, which generated an average 2 cubic feet of waste soil per hole as opposed to the average 50 cubic feet of waste generated per hole using a conventional auger drill.
- About 200 cubic feet of hazardous waste was avoided at the Savannah River Site by replacing plastic sheeting with launderable tarps and tape with reusable cuffs (for personnel protective equipment) during environmental restoration activities.
- About 40,500 cubic feet of low-level radioactive waste was avoided at the Formerly Utilized Site Remedial Action Project - General Motors Site by using high-pressure water flushing with in situ inspection instruments to clean underground piping and to verify that the cleanup criteria was met.

In June 1996, the Department issued a Baseline Environmental Management Report to Congress stating that pollution prevention in environmental restoration could save the complex tens of billions of dollars. According to the *1996 Baseline Environmental Management Report*, environmental cleanup costs over the estimated life-cycle of the environmental management program could advance beyond $227 billion (including more than $63 billion to remediate soils and ground water, decontaminate buildings, and dispose of an estimated 29 million cubic meters of waste).

The Office of Environmental Restoration-commissioned study concurs with the *1996 Baseline Environmental Management Report* which stated that tens of billions of dollars could be saved complex-wide by applying P2 to DOE projects. This study also provides findings which suggest that P2 is being delivered as an integration function in support of a cleanup project rather than an independent initiative. The study goes on to say that P2 is being successfully integrated into cleanup projects but it suffers from a credibility gap. Project managers view P2 activities as competing for resources and delaying schedules, and attempting to measure performance of P2 is a daunting task.

The study makes the following recommendations to help achieve maximum integration and increased waste avoidance and cost savings during environmental restoration activities:

- Integrate pollution prevention principles into all environmental restoration projects at the planning/negotiation phase and evaluate pollution prevention implications during subsequent project phases.
- Incorporate pollution prevention methodology into the EM Project Manager's Handbook for Improved Project Definition.
- Continue to collect pollution prevention case studies and lessons learned for dissemination to the field.
- Consider mini-workshops at EM conferences or symposiums that discuss pollution prevention in environmental restoration implementation strategies and project management tools.
- Continue to issue fact sheets highlighting pollution prevention expectations and success of other DOE initiatives.

The complete study is available on the Internet through DOE's EM Home Page (www.em.doe.gov). For further information contact: Robert Fleming, EM-43, at 301-903-7627 or robert.fleming@em.doe.gov or Lisa Allmon-Burns, IT Corporation, at 513-782-4700 or lallmon@primax.net.

Credits

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Five-Year Argonne Cleanup Plan to Save $100 Million

On October 24, 1996, the Department of Energy and Argonne National Laboratory announced a new environmental cleanup plan that will save nearly $100 million while remediating existing environmental problems at Argonne's Illinois site in one-third of the time. "This will make Argonne one of the first major, multiprogram laboratories in the DOE system to complete its environmental restoration projects and wipe the books clean," said Secretary of Energy Hazel R. O'Leary.

According to Dean E. Eastman, Argonne's director and chief executive officer, the new accelerated plan will enable Argonne "to clean up all the currently known environmental problems at our Illinois site by the year 2001 for an additional $57 million." This is a savings almost $100 million and nearly 10 years. The previous plan would have required an additional $155 million, and cleanup at the site would not have been completed until the year 2010.

The new plan addresses about 50 remaining contaminated areas and 8 remaining "decontamination and decommissioning" projects. The contaminated areas include three former landfills, two former chemical waste disposal sites, drying ponds for sludge from water treatment plants, facilities previously used to store radioactive waste, and a hillside contaminated with lead from a former shooting range for the Argonne security force. The decontamination and decommissioning projects comprise six small retired nuclear reactors; one small retired particle accelerator; and three facilities formerly used to store, process, or examine radioactive materials.

For more information call Brian J. Quirke at 630-252-2423.

EM PROGRESS
RECLAIMING THE PAST TO SECURE THE FUTURE

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We are interested in receiving your comments—what you like and what you don't like—about *EM Progress*. Your views, comments, and suggestions are appreciated.

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Look for the Spring 1997 issue of *EM Progress* to be distributed in late March!

EM PROGRESS

RECLAIMING THE PAST TO SECURE THE FUTURE

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 6 • Number 1 Winter 1997

DOE Responds to NAS Recommendations

The Department of Energy's Carlsbad Area Office is taking action on several recommendations made recently by the National Research Council of the National Academy of Sciences (NAS) to enhance confidence in the long-term performance of the Waste Isolation Pilot Plant (WIPP).

Carlsbad Area Office Manager George Dials outlined the Department's progress on the recommendations during a November 22 meeting in Albuquerque, New Mexico, with members of the NAS WIPP Committee. "The Department places great value on the nearly 20 years of scientific and technical oversight provided by the NAS," said Dials. "The DOE is committed to providing timely feedback to the panel members on our resolution of their recommendations to further ensure the long-term performance of the WIPP."

Released in October, the National Research Council's report, titled *The Waste Isolation Pilot Plant: A Potential Solution for the Disposal of Transuranic Waste*, expresses NAS' confidence in the WIPP's ability to protect the public health and the environment for thousands of years. However, the National Research Council also makes several recommendations tied to reducing the consequences of potential future human intrusion during the 10,000-year regulatory period prescribed by the U.S. Environmental Protection Agency (EPA).

The National Research Council's major recommendations and the Department's responses follow.

Recommendation: Speculative scenarios of human intrusion should not be used as the primary basis on which to judge the acceptability of the WIPP.
Response: The Department agrees with this recommendation. However, EPA requires the Department to review all credible human intrusion scenarios. Only human intrusion might lead to a release of radioactivity, yet as the committee states, none of the scenarios results in a release above regulatory limits.

Recommendation: Laboratory and onsite research programs could show that the potential is minimal for radioactive elements to dissolve in brine water and migrate beyond the repository boundary as a result of human intrusion
Response: Experimental and field programs show that key parameters are well within the range required to reduce the impacts of human intrusion. Test results are included in the Compliance Certification Application submitted recently to EPA. Ongoing studies of solubility and migration will further support the Department's positions stated in the application.

Recommendations, *continued on page 3*

Pollution Prevention Reduces Waste and Saves Money

The Department of Energy has substantiated the claim that pollution prevention can have a significant impact on cleanup operations. Most environmental professionals agree that restoration activities, by nature, will manage large volumes of waste resulting from cleanup operations, and this waste must be dispositioned. The Department has found that the final volume of waste actually disposed in a landfill or disposal facility can be greatly reduced by applying pollution prevention and waste minimization strategies. Early application of these strategies maximizes the reduction in the volume of wastes to be managed and decreases the cost of waste management.

More than 2.3 million cubic feet of waste materials from Department sites was avoid-

Prevention, *continued on page 14*

In This Issue...

DOE/EPA Workshop Promotes a Viable Streamlining Approach 2

Portsmouth Converts Sludge Lagoons to Prairie Ecosystem 4

Mixed Waste Vitrification Begins at Savannah River 6

Oakland Completes Geothermal Test Facility Brine Pond Restoration 7

FUSRAP Wins Tennessee Quality Award.....13

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DOE/EPA Workshop Promotes a Viable Streamlining Approach

A new environmental restoration workshop, jointly sponsored by the Department of Energy (DOE) and the Environmental Protection Agency (EPA), is currently being offered at sites as a precursor to the initiation of project-specific reviews intended to ensure the best technical approaches, priorities, and schedules are implemented in support of the 10-year plan objectives. The principles promoted in this workshop evolved out of the joint DOE/EPA Streamlined Approach for Environmental Restoration (SAFER) pilot projects and Strategic Milestone Reviews conducted in Fiscal Years 1995 and 1996.

Through the application of these environmental restoration principles, the Department, EPA, and State Remedial Project Managers have successfully accelerated schedules and reduced project costs at several facilities across the complex. The workshop is used to bring together, in an informal atmosphere, DOE, EPA, and State personnel with direct responsibility for the technical management of environmental restoration projects at a given facility. Group exercises and case studies based on previous site experiences are then used to reinforce a results-oriented way of defining problems and likely solutions, looking at uncertainty from a pragmatic point of view and converging on remedies with confidence as a decision-making team.

DOE/EPA's Principles of Environmental Restoration

- Creation of an effective project team is essential.
- Clear, concise, and accurate problem identification and definition are critical.
- Early identification of likely response actions is possible, prudent, and necessary.
- Uncertainties are inherent and will always need to be managed.

To date, workshops have been held at Savannah River, Oak Ridge, and Idaho to kick off peer reviews—an initiative implemented by Environmental Restoration's Deputy Assistant Secretary Jim Owendoff to facilitate inter-site communication and assist sites in identifying opportunities to streamline projects through collaborative, strategic thinking about site problems and their solutions. These peer reviews, which are conducted jointly with the DOE project teams and their respective EPA and State regulators, are tailored to the specific site problems

Workshop, *continued on page 3*

Idaho/ Albuquerque Cooperative Effort Saves Equipment Costs

Under a Memorandum of Agreement (MOA) with the Idaho National Engineering Laboratory (INEL), the Albuquerque Operations Office's Los Alamos National Laboratory (LANL) saved about $381,000 in cleanup costs during the last fiscal year. The MOA facilitated the loan of concrete crushing equipment from INEL.

The EXCEL 1500 Series concrete crusher was transported to LANL from INEL in March 1996, and the equipment was used to pulverize about 2,000 tons of releasable concrete that was disposed of onsite. This resulted in substantial savings to the Department of Energy and avoided the need for the Department to purchase duplicate equipment. As an additional cost savings to LANL, INEL provided transportation, training, startup personnel, and maintenance on the concrete crushing equipment.

For more information contact Andy Mikkola at 208-526-0725.

INEL's EXCEL 1500 Series concrete crusher.

Some key components of the WIPP legislation signed by President Clinton on September 23, 1996, include:

- EPA will continue as the primary regulator of the WIPP. Removing bureaucratic delays does not infringe on the stringent regulatory requirements the Department must meet to open the WIPP.
- EPA will have one year to review the Compliance Certification Application that the Department submitted on October 29, 1996.
- Upon EPA certification (expected in October 1997), the Department will begin shipping transuranic waste in November 1997 (instead of April 1998).
- Exempts the Department from the requirement to meet the "no migration" standard in the Resource Conservation and Recovery Act. EPA agrees that the requirement is redundant to the more stringent radioactive waste disposal criteria, and that the exemption will not jeopardize the environment nor the public health and safety.
- Beginning in 1997, New Mexico will receive $20 million annually for 15 years. The money will be used for infrastructure and road improvements.

Recommendations, *continued from page 1*

Recommendation: Implementation of engineered options (compartmentalization of disposal rooms and treated backfill material) could substantially reduce the consequences of human intrusion.
Response: The Department completed studies considering a large number of actions that could provide additional assurance against the consequences of human intrusion. As a result of these studies, panel seals and magnesium oxide as a backfill material have been chosen to control disposal room chemistry and to provide added assurance that the WIPP will comply with regulatory requirements.

"The results of these NAS committee suggested actions are already included in the Compliance Certification Application we submitted to the EPA on October 29, 1996. Ongoing scientific study programs also will enhance regulator and public confidence in the WIPP and will reduce any uncertainty in our compliance calculations," Dials said. "These programs focus on hydrology, chemistry, room seals, and rock mechanics, and overall performance assessment."

Future experiments will focus on maintaining compliance for recertification by EPA every five years during disposal operations.

Beyond that, the Department will continue its work on the national and international levels to share technological developments that will assist in addressing the nuclear waste problem on a global basis.

The WIPP, which is designed to permanently dispose of radioactive transuranic waste left from the research and production of nuclear weapons, is scheduled to begin waste disposal operations in November 1997, pending EPA approval.

For more information contact Patty Baratti-Sallani at 505-234-7313.

Workshop, *continued from page 2*

being addressed while relying on the environmental restoration principles as a foundation for the technical evaluations that follow.

A national workshop is scheduled for January 14-15, 1997, in Albuquerque, New Mexico, to bring together DOE, EPA, and State representatives from across the country to identify opportunities where the principles could be applied at specific projects within the DOE complex.

For specific information on the Principles of Environmental Restoration workshop, or to discuss possible technical assistance in conducting a peer review, please contact Steve Golian in the Office of Program Initiatives at 301-903-7791 or Rich Dailey in the Office of Environmental, Safety, and Health at 202-586-7117.

EM Signs Innovative Recycling Policy

On September 20, 1996, the Department of Energy's Office of Environmental Management (EM) signed a demonstration policy for recycling radioactively contaminated carbon steel resulting from decommissioning activities within the EM Program. The policy, which was developed with extensive stakeholder input, specifically recognizes that EM has a tremendous opportunity to minimize the disposal of contaminated metals as waste by recycling it into disposal containers.

The policy further recognizes EM's demand for disposal containers and its role as the major generator of radioactively contaminated steel. The policy goes on to state that "effective immediately, it is EM's policy—to the degree that it is economically advantageous and protective of worker and public health—to recycle radioactively contaminated carbon steel either in storage or to be generated in the future. This policy is fully supportive of the various site-specific recycling initiatives underway or planned and will be in place for three years from the date of the memorandum, at which time it will be reevaluated."

When the Department decided in 1994 to develop this recycling policy, it invited stakeholders to provide early input into

Recycling *continued on page 13*

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Portsmouth Converts Sludge Lagoons to Prairie Ecosystem

After just two months of construction, three lime sludge lagoons, spanning 18 acres northeast of the Portsmouth Gaseous Diffusion Plant in Piketon, Ohio, have been dewatered and covered with soil, and are being converted to a prairie ecosystem and wetland.

The sludge lagoon conversion is the first Corrective Measures Implementation project under the Resource Conservation and Recovery Act at Portsmouth. In February 1996, the Ohio and U.S. Environmental Protection Agencies held a public meeting on the project, and by June the agencies had issued their Decision Documents. Construction was initiated on July 17.

This aerial photograph shows the X-611A lime sludge lagoons on the northeast side of the plant as they looked prior to remediation efforts.

On September 30, 1996, the first phase of the project was completed on schedule. This involved pumping off nearly 85 million gallons of water from the lagoons and disposing of the water in accordance with the plant's National Pollutant Discharge Elimination System outfall permit criteria.

Once the lagoons were dewatered, workers placed nearly 100,000 square yards (or 12 miles of seam) of hand-sewn, geotextile fabric over the sludge to stabilize it for a soil cover. A 2-foot-deep anchor trench was dug around the lagoons, and the edges of the fabric were locked in place. Workers then placed more than 12,000 truckloads of dirt perpendicular to the fabric in a "fingering" method, allowing space between rows and ensuring uniform pressure across the entire area. Soil was then placed between the fingers and graded to a minimum of 2 feet deep.

Winter rye was planted in the soil to provide temporary winter erosion control. In April 1997, the final phase of the project will be completed to convert the area to a prairie habitat. The existing vegetation will be tilled, and Southern Ohio prairie grasses will be planted in its place. Once the prairie grasses are established, the area will be mowed once a year, and one third of it will be burned each year to maintain the prairie. A small portion of the former lagoons will be left to develop naturally into a wetland area.

"This effort could not have been accomplished had it not been for the Decision Team process at Portsmouth, allowing for expedited reviews at key decision points," said Jim McMaster, Lockheed Martin Energy Systems project manager. The Decision Team consists of the project coordinators from the Department of Energy's Portsmouth Site Office and the

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Ohio and U.S. Environmental Protection Agencies. The team was established in 1994 to cost-effectively address issues as soon as they are identified and to accelerate remedial decisions.

The lagoons collected waste lime from the water treatment plant between 1954 and 1960. For a short period from 1956 to 1957, chromium-laden sludge from cooling water used in the uranium enrichment process was disposed in the lagoons. Chromium had been added to the cooling water as a corrosion inhibitor. The plant now uses a nonhazardous, phosphate-based corrosion inhibitor.

For further information contact John Sheppard at 614-897-5510 or Sandy Childers at 614-897-2336.

Workers begin placement of the geotextile fabric over the sludge. This is enough fabric to cover 20 football fields.

This photo shows the lagoons after completion of Phase I, at the end of September.

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Savannah River Successes

Savannah River to Begin Closing High-Level Waste Tanks

With the vitrification of high-level radioactive waste beginning in March 1996, the Savannah River Site's Defense Waste Processing Facility started the final process in the Nation's nuclear cleanup. The Savannah River Site is transferring that momentum to another first-of-its-kind milestone—the closure and stabilization of high-level radioactive waste storage tanks.

Approximately 34 million gallons of high-level radioactive waste are stored in 51 underground waste tanks at the Savannah River Site. Working closely with the South Carolina Department of Health and Environmental Controls and the Environmental Protection Agency, the Savannah River Site developed closure criteria and a High-Level Waste Tank Closure Plan for all 51 tanks on the site.

An Environmental Assessment was also conducted in accordance with the National Environmental Policy Act to evaluate potential impacts to the public, the workers, and the environment of the proposed actions and alternatives for tank closure. Also, stakeholders and the general public have been involved from the onset via numerous meetings and briefings with the Savannah River Site Citizens Advisory Board and a public informational meeting held on June 11, 1996.

The regulators and the public are very supportive of tank closure. "We need to get on with it," Lee Poe, a member of the SRS Citizens Advisory Board, told the *Aiken Standard* at the public informational meeting. "The plan is very conservative, and it provides for the protection of the safety and health of the public." The Savannah River Site is currently discussing the waste classification of residual tank waste with the Nuclear Regulatory Commission.

The Savannah River Site plans to close three high-level radioactive waste tanks in 1997, starting with Tank 20 in F-Area. The site's Ten Year Plan envisions closure and stabilization of 20 of the 24 single-shell high-level radioactive waste tanks by 2006. By the year 2018, the remaining legacy high-level radioactive waste will be removed and stabilized.

For more information contact Larry Ling at 803-208-8248.

Mixed Waste Vitrification Begins at Savannah River

On October 18, the Savannah River Site began turning mixed radioactive and hazardous waste into a glass form for safe storage. This process, called vitrification, helps to stabilize the waste and reduce its volume.

The mixed-waste contract is the first Department of Energy commercial contract involving glassification of low-level mixed waste. GTS Duratek, a Maryland-based radioactive and hazardous waste management company, is handling the project.

The 670,000 gallons of mixed waste are currently stored in 2 above-ground, 500,000-gallon tanks and in 125 drums, all in M Area. This waste has accumulated in the past from the fabrication of fuel and targets for use in site reactors. Converting the mixed waste to a glass form is expected to take about 12 months to complete.

The vitrification process produces highly durable glass pellets that resemble flattened marbles. The pellets will be stored inside 71-gallon square drums. Besides stabilizing the waste, the vitrification process also reduces its volume by about 75 percent—from 670,000 gallons of liquid to less than 170,000 gallons of glass.

For more information contact Dave Williamson at 803-557-3928.

Savannah River Removes 40 Tons of Solvent Contaminants

Between October 1995 and August 1996, the Savannah River Site removed over 80,000 pounds of chemical solvent contaminants through the operation of three ground-water treatment facilities and five soil vacuuming units, as well as several demonstration projects.

The combination of treatment methods mean 5 tons of solvent—compared to less than a ton previously—are now being removed from the area each month. This improvement over last year's performance is due to increased efficiency, availability of soil and ground-water remediation facilities, and continued research and development activities.

The ground-water facilities currently in operation have removed more than 340,000 pounds of organic compounds from more than 2.3 billion gallons of ground water during the past 10 years of operation.

For more information contact Mike Simmons at 803-725-1627.

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SRS Spent Fuel Program Quietly and Safely Revived

Despite a long and sometimes controversial process to renew the United States' policy of taking back U.S. origin highly enriched spent fuel rods from foreign research reactors, the "Reduced Enrichment for Research and Test Reactors program" was quietly revived on September 22, 1996.

And that was good for the Department of Energy, and in particular, the Savannah River Site, the Department facility identified by Energy Secretary Hazel O'Leary to receive over 17,000 aluminum-clad spent nuclear fuel elements from foreign research reactors over the next 13 years.

Although the Savannah River Site had a history of safely receiving and storing spent nuclear fuel from foreign and domestic research reactors since 1963, heightened public and political concern over bringing additional spent nuclear fuel to the site made it necessary to have a successful and safe first shipment.

"Everything went as planned. We got the ships in and tied up and all the inspections were done faster than we had originally projected. Everything went very smoothly because of the teamwork and planning by the Department, the Savannah River Site, the Naval Weapons station, South Carolina agencies, and other Federal agencies," said Jim Giusti, DOE Savannah River Office of External Affairs.

Five countries participated in the first shipments: Germany, Sweden, Columbia, Switzerland, and Chile. Together, the cargo bound for the Savannah River Site included 8 casks of 281 spent nuclear fuel assemblies (rods). The casks were received at the Naval Yard in Charleston, South Carolina; from there, they were loaded and trucked to the Savannah River Site about 150 miles away.

The shipment of foreign research reactor fuel will continue until 2013, with the second shipment planned for early 1997. The remaining foreign spent fuel will come from 34 different countries including Australia, Japan, and South Korea.

For more information contact Mary Flora at 803-952-6852.

Oakland Completes Geothermal Test Facility Brine Pond Restoration

The Department of Energy's Oakland Operations Office has successfully completed the restoration of the Geothermal Test Facility Brine Pond. This project involved removing and disposing of about 21,500 tons of soil waste contaminated with naturally occurring radioactive material components and elevated levels of arsenic. The waste was safely disposed of at an offsite facility specially designed and regulated for this purpose.

Located 140 miles east of San Diego, the Geothermal Test Facility is an 82-acre site that was formerly used by the Department to perform studies for geothermal power generation. A 6-acre, PVC-lined brine evaporation pond was installed in 1972 to store geothermal process water. Residues and precipitates from the fluids resulted in the deposition and concentration of contaminants at the base of the pond. The contaminants were concentrated in the brine pond as a result of the evaporation process during past facility operations. Brine pond restoration activities began in September 1996 and were completed in November 1996 at a cost of $2.9 million.

Restoration efforts were accelerated as a result of the Environmental Management Small Sites Initiative. This initiative focuses technical and financial resources at the smaller cleanup sites, reducing mortgage liabilities and overall project costs.

For more information contact Hemant Patel at 510-637-1568.

Oakland Operations Office personnel observe the last shipment of contaminated material as it is removed from the Geothermal Test Facility. From left to right: Jim Turner, Oakland Operations Office Manager; Hemant Patel, DOE-EM Project Manager; Doug Ash, Oakland Operations Office Chief of Staff; Doug Tillman, U.S. Army Corps of Engineers.

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Rocky Flats Meets Major Milestones

Rocky Flats is continuing to make significant progress in stabilizing and consolidating special nuclear material; removing hazardous waste from the site; and further reducing risk to workers, the public, and the environment. The following activities comprise some of the major milestones completed at Rocky Flats this year.

Venting of Solid Residue Drums.

Rocky Flats completed the venting of 2,696 solid residue drums 9 months ahead of schedule. The residue drums were vented to prevent hydrogen gas buildup from the contents of the drums and to further reduce risk to workers. Typical residue materials in the drums include metal, glass, graphite, crucibles, chemical processing salts, combustibles, filters, gloves, incinerator ash, and sludge.

Draining and Removal of HEUN Solutions from Building 886.

Rocky Flats completed the removal of 2,700 liters of Highly Enriched Uranium Nitrate (HEUN) solutions from Building 886, a former research facility. This is a major step forward in reducing risks for Rocky Flats workers and in cleaning up the site. The bottled HEUN solutions will be shipped to Nuclear Fuel Services in Erwin, Tennessee, where they will be converted into a stable oxide form and eventually used as fuel for government research reactors. In addition, Rocky Flats contractors working together on this project clearly demonstrated how the integrated Management Contractor concept can work. Six different subcontractors had to work together to successfully complete this project. The removal of the HEUN solutions clears the way for further deactivation and ultimate decommissioning of Rocky Flats.

Transfer of Beryllium Offsite.

The shipment of 17,000 pounds of beryllium was completed in September. Consisting primarily of classified weapons parts, the beryllium was shipped to Brush Wellman in Elmore, Ohio, where the parts will be converted for the Idaho National Engineering Laboratory to use in its Advanced Test Reactor. An additional 31,000 pounds have been packaged and are awaiting shipment to Ohio.

Demolition of Building 889.

Building 889 was the first nuclear facility at Rocky Flats to be demolished. Workers removed uranium contamination from the building walls and floors and asbestos from the roof of the facility before it was demolished. Originally constructed in the late 1960s, Building 889 was used as an equipment decontamination and repackaging facility for depleted uranium and beryllium manufacturing operations.

Trenches T-3 and T-4 Excavation.

Excavation of Trenches T-3 and T-4 was completed in September. Approximately 1,706 cubic meters of contaminated material were excavated from T-3, and 2,090 cubic meters of contaminated material were excavated from T-4. The trenches were a potential source of volatile organic compound and radionuclide contamination to ground water.

Demolition of Oil Tanks.

Decommissioning, dismantlement, and removal of two oil tanks were completed in August. Removal of these tanks eliminated a potential source of contamination. The tanks were constructed in the mid-1950s and initially served as the fuel source for the steam plant. They were later retained as backup when natural gas was installed.

Underground Storage Tank Source Removal Project.

The cleaning and foaming of the underground storage tanks were completed on September 23. All contaminated materials in the tanks were removed and treated using onsite treatment facilities. The tanks were rinsed and filled with closed-cell polyurethane foam to prevent surface or ground-water infiltration. This was an interim closure action. The tanks will undergo final closure when their associated buildings are decontaminated and decommissioned.

Shipment of Saltcrete for Offsite Disposal.

Shipment of Saltcrete for offsite disposal was completed in April. Several thousand cubic feet of low-level mixed waste, in the form of Saltcrete, were shipped offsite. The Saltcrete was previously stored in Tent 12 on the 750 Pad. This tent is now empty.

Removal of Stored Waste and Solid Residues from Building 779.

All stored waste and solid residue were removed by September 30, and Building 779 is being prepared for demolition.

Disposal of 48 Reactive Chemicals.

Disposition of "priority one" reactive chemicals was completed in July, two months ahead of schedule. These chemicals were generally shock-sensitive or explosive and presented a high safety and health hazard.

Interim Soil Action Levels Set.

The Rocky Flats Cleanup Agreement has taken one more step down the road to an effective and efficient cleanup with a decision on interim soil action levels for radioactive contamination. The decision, announced on October 18, set the dose

Rocky Flats, *continued on page 9*

Rocky Flats, *continued from page 8*

level for radioactive contamination at Rocky Flat's soil and the methods to calculate the amount of radioactivity in soils that would yield that dose. As in all action levels, any contamination below that level would not have to be dealt with. This action level ensures that no member of the public will receive a radiation dose greater than 15 millirem per year and that land-use controls would be maintained to meet this level.

Much work remains at Rocky Flats as facilities are deactivated, decontaminated, and decommissioned, and cleanup plans are implemented. The site will continue to work aggressively to complete other major milestones, further reduce risk, and move toward site closure.

For more information contact Liz Wilson at 303-966-3655.

Rocky Flats Hosts International Visitors

On November 6 and 7, 1996, Russian officials and observers from the International Atomic Energy Agency (IAEA) visited Rocky Flats to examine how IAEA safeguards for weapon-origin fissile materials have been implemented at U.S. plutonium facilities.

The group, numbering approximately 30, included 10 officials from the Russian Federation Ministry of Atomic Energy, 5 IAEA observers, various staff from Department of Energy Headquarters and other Department facilities, and their interpreters. The focal point of the visit was the Material Access Area of Building 371, the location of the neutron multiplicity counter and gamma spectrometer. The group also got a glimpse inside the Special Nuclear Material vault. Prior to this visit, the IAEA had completed its annual physical inventory of special nuclear material stored there. A bus tour of the protected area rounded out the visit.

The group has also visited the Hanford Site and Argonne National Laboratory-West for a demonstration of remote monitoring activity. The tour followed a September conference in Vienna between Secretary O'Leary, her Russian counterpart, and the director general of the IAEA concerning the practical application of verification of fissile materials.

For more information contact Liz Wilson at 303-966-3655.

Rocky Flats Waste Inventory Shrinks in 1996

Waste shipments leaving the Rocky Flats Environmental Technology Site in Fiscal Year 1996 exceeded the amount of waste generated onsite for the first time since nuclear weapons production ceased in 1989. The volume of low-level mixed waste onsite was actually reduced by approximately 4.5 percent in Fiscal Year 1996.

"Kaiser-Hill has successfully kept pace with the new waste generated this year by consistently shipping waste offsite so we actually have less waste onsite now than we did at the beginning of Fiscal Year 1996," said Tim Hedahl, Kaiser-Hill manager of Environmental Restoration and Waste Management. "This accomplishment demonstrates the commitment of the Kaiser-Hill team to the closure of Rocky Flats in 10 years. Removing waste from the site is a visible sign of the progress we are making."

A total of 40,395 cubic feet of low-level mixed waste, 74 truckloads, was shipped offsite during Fiscal Year 1996. These shipments fulfilled a Rocky Flats Cleanup Agreement milestone developed by the Department of Energy, the Environmental Protection Agency, and the Colorado Department of Public Health and Environment.

The shipments consisted mainly of Saltcrete, a cemented processed waste salt. Additional waste shipments included low-level waste (3,072 cubic feet), hazardous waste (3,213 cubic feet), nonregulated hazardous waste (6,179 cubic feet), and polychlorinated biphenyls (10,311 cubic feet). Other significant offsite shipments included 53,049 pounds of excess beryllium left over from past weapons production operations to Brush Wellman in Elmore, Ohio; 12 shipments of weapons components and enriched uranium to 3 other Department facilities; and 22 pieces of Stockpile Reliability Equipment shipped to Los Alamos National Laboratory to support the weapons mission there.

For more information contact Lara Ramsey at 303-966-3463.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

INEL Innovations

INEL Celebrates Five Years of Cleanup Activities

The Idaho National Engineering Laboratory (INEL) has completed the first five years of cleanup under a 1991 agreement between the Department of Energy, the Idaho Operations Office, Region 10 of the Environmental Protection Agency, and the State of Idaho Department of Health and Welfare.

December 9, 1996, marked the five-year anniversary of the INEL Federal Facility Agreement and Consent Order, the document that guides cleanup activities at INEL. In the last five years, INEL has cleaned up sites containing asbestos, petroleum products, acids and bases, radionuclides, unexploded ordnance and explosive residues, polychlorinated biphenyls, heavy metals, and other hazardous wastes. The Department of Energy is continuing to follow the schedule outlined in the document as the comprehensive investigations begin.

Since the agreement was signed, the Department of Energy, the Environmental Protection Agency, and the State of Idaho have completed 4 of 5 remedial actions and 181 of 207 limited field investigations, and have signed 14 of 23 Records of Decision. Three ongoing significant projects involve the removal and treatment of organic vapors beneath the Radioactive Waste Management Complex, the excavation and treatment of buried mixed transuranic waste from Pit 9, and the pumping and treatment of contaminated ground water from beneath the Test Area North.

"I think some of the success we've had here can be attributed to the positive working relationship between the three agencies," said Nolan Jensen, who heads the Environmental Restoration Program for DOE-Idaho. "The Department of Energy has a positive, outcome- oriented relationship with the regulators. Overall, the public has also been a strong supporter of our cleanup activities."

Since 1994, the Environmental Restoration Program has spent more money on actual cleanup activities than on assessment. For Fiscal Year 1997, the program will spend 75 percent of its budget on cleanup projects and interim and removal actions. The remaining 25 percent will be spent on assessment and program direction and support.

Despite the successes, the agencies have a significant challenge ahead—what to do with the millions of cubic feet of radioactively and organic-contaminated waste buried at the Radioactive Waste Management Complex. A comprehensive remedi-

INEL, *continued on page 11*

Workers collect samples of radionuclide-contaminated soils prior to a removal action last summer. Contaminated soils were a result of spills, storage of surface-contaminated materials, and windblown contamination. Primary contaminants identified during this removal action were cesium-137, strontium-90, and europium-152.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

INEL, *continued from page 10*

al investigation/feasibility study is underway to determine if the wastes should be left in place, excavated, or isolated by a cap to be installed over the area. A decision is expected in 1998.

The last cleanup Record of Decision will be signed by the Department of Energy, the Environmental Protection Agency, and the State of Idaho in 2001. INEL is expected to be removed from the National Priorities List by 2006.

For more information contact Erik Simpson at 208-526-4700.

Construction is continuing on the Pit 9 retrieval and treatment facilities at the Radioactive Waste Management Complex. The Pit 9 project is a pioneering effort within the Department of Energy—the first privatized project in the Nation involving the cleanup of buried mixed transuranic waste. Excavation of buried waste from Pit 9 will take place within the retrieval facility (lower left). The waste will be stabilized in the treatment facility (middle of photo) where plasma arc melting will convert the waste to a molten mass resembling obsidian rock.

☆☆☆AWARDS☆☆☆

INEL Recognized for Saving $20 Million

By eliminating unnecessary work at the Idaho Chemical Processing Plant, the Idaho National Engineering Laboratory (INEL) has been able to redirect $20 million to accelerate site cleanup and improve regulatory compliance. Energy Secretary Hazel O'Leary applauded this effort by presenting Vice President Gore's National Performance Review "Hammer Award" to John Wilcynski, Manager of the Department's Idaho Operations Office, on October 9, 1996.

In 1995, a team of representatives from DOE-Idaho and Lockheed Martin Idaho Technologies Company (LMITCO) evaluated the costs of operations at the Idaho Chemical Processing Plant, where spent nuclear fuel and high-level radioactive wastes are managed. The 20-person team, led by DOE-Idaho's Tom Wichmann, identified and recommended the elimination of unnecessary or redundant activities. Another LMITCO team evaluated and implemented the recommendations which, by the time of the award, had returned $20 million to the laboratory for reinvestment. Additional savings of $10 million a year are expected from streamlining work control procedures.

Three other INEL employees, Mark Arenaz of DOE-Idaho and Carlos Tellez and David Crandell of LMITCO, were also honored as contributing team members to the "Hammer Award" given to Don Pearman, DOE Assistant Secretary for Field Management. The team consolidated 13 DOE Orders, a total of 1,500 pages, into 1 performance-based order of only 14 pages.

For more information, please contact Ron Ramsey at 301-903-7981.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Fernald Hosts Mixed Waste Treatment Demo

Terra-Kleen Response Group, Inc., is demonstrating a new technology at the Department of Energy's Fernald plant near Cincinnati, Ohio, that provides an alternative to incineration for treating mixed waste and tri-mixed waste. Mixed waste is material containing Resource Conservation and Recovery Act (RCRA) and radioactive contaminants; tri-mixed waste contains both RCRA and radioactive contaminants plus Toxic Substance Control Act (TSCA) contaminants.

The new technology, called Mobile Solvent Extraction, is being demonstrated under the Rapid Commercialization Initiative (RCI) that was developed to bring new technologies into commercial use. This process treats both mixed and tri-mixed waste by using a nonhazardous solvent to wash hazardous organics from soils, sludges, and debris. The contaminated solvent then passes through a recovery unit where 90 percent of the solvent is recovered and recycled, leaving about 10 percent for treatment and disposal. An added value of this new process is that it provides a safe alternative to incineration, which can leave unburned or partially burned intermediate products to potentially escape into the atmosphere.

The Terra-Kleen process holds the only nationwide TSCA permit for a nonthermal process to remove polychlorinated biphenyls (PCBs). The technology was previously demonstrated successfully through the U.S. Environmental Protection Agency (EPA) Site Program for the treatment of PCB-contaminated soils.

The Fernald demonstration is expected to be completed by mid-February, then through an additional contract, the Terra-Kleen equipment will treat about 9,500 cubic feet of the mixed and tri-mixed wastes and eliminate the entire waste stream at Fernald. The extraction process should be applicable for use at any DOE site that has PCB-contaminated radioactive wastes as well as radioactive wastes contaminated with hazardous substances.

The Mixed Waste Focus Area (MWFA), a national program managed at the Idaho National Engineering Laboratory, partnered with Fernald and Terra-Kleen to cofund this demonstration of the technology. The MWFA supported the project through its Quick Win Program, whose goal is to provide treatment technologies, either commercial or DOE developed, that can reduce the Department's mixed waste inventory in the near term.

Several government agencies are involved in the demonstration as the RCI project team: DOE, Department of Commerce, Department of Defense, EPA, and representatives from various State environmental agencies. The RCI is a government effort designed to identify and reduce barriers that impede market entry of new technologies.

The RCI program relies on a collaboration between Federal agencies and provides funding for State representatives from six States to work on a performance audit of the new technology. Those States are South Carolina, Ohio, Tennessee, California, Colorado, and Kentucky.

When the RCI participant receives approval from the project team representatives, the technology developer can proceed to permit its project or process in those States without going through separate lengthy and costly demonstrations in each State.

For more information contact Dennis Cook at 513-648-3820.

Investigations Completed at Fernald

The Department of Energy's Fernald Environmental Management Project (FEMP) has successfully completed the Remedial Investigation/Feasibility Study process, a key activity under the U.S. Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation and Liability Act program. A former uranium metal production facility, the FEMP is the first major site in the Department's weapons complex to complete this process.

"The investigations phase of the project is vital to the long-term environmental remediation effort. We have accurately defined the nature and extent of environmental contamination associated with the FEMP and, by involving the public, developed cleanup plans which have been approved by the EPA," said Jack Craig, director of the DOE-FEMP office.

For more information contact Gary D. Stegner at 513-648-3153.

Safe shutdown workers remove holdup materials from equipment and lines in preparation for building dismantling at the Fernald Environmental Management Project in Ohio.

Students Gain Experience Through FUSRAP Summer Program

The Department of Energy's Formerly Utilized Sites Remedial Program (FUSRAP) gave eight college students the opportunity to gain some hands-on experience this past summer. Most worked in Oak Ridge, Tennessee, but some took field assignments in such States as New York and Ohio.

David Horton was assigned to help with the FUSRAP site in Painesville, Ohio.

David Horton of Durham, North Carolina, is pursuing a degree in civil engineering from North Carolina A&T State University. "It's a very friendly environment here," said Horton, who worked as a co-op with FUSRAP's Missouri/Ohio team on the FUSRAP site in Painesville, Ohio. "People tend to be on the positive side, and there's a real sense of teamwork."

Brenda Perkovich of Eau Claire, Wisconsin, is pursuing a master's degree in environmental management at Duke University. She worked in special programs through a DOE fellowship and helped determine whether utility workers could encounter radiation near one of FUSRAP's sites. "I'm researching the types of radiation involved, the types of utilities, and other variables," Perkovich said. "After FUSRAP analyzes the data to see if there is any chance for workers to be exposed to radiation, they'll send the information to the utility boards.

Brenda Perkovich worked in special programs through a DOE fellowship.

Other students who worked with FUSRAP this summer include summer hires Keri Gusmann, Hiram College, and Tom Dugan, Erie Community College; interns Zel-Denise Jones from Tennessee State University, and Darren Stewart from Vanderbilt University; and co-op students Jared Johnson and Wayne Hastings from the University of Tennessee.

For more information contact Melyssa Noe at 423-241-3315.

Recycling, *continued from page 3*

the policy development process from the very beginning. From July 1994 through the end of 1995, stakeholders (including members of the public; State and Federal regulators; Department field and headquarters organizations; contractor personnel; and representatives of elected government, labor, and industry) were invited to identify key issues of concern and to provide input as the policy developed.

A copy of the policy can be obtained from the Department's EM home page (http://www.em.doe.gov, click on "Environmental Restoration" then on "Recycling in the EM Program") or from Stephen Warren (DOE/EM-43) via e-mail at stephen.warren@em.doe.gov.

For more information contact Stephen Warren at 301-903-7673.

☆☆☆AWARD☆☆☆

FUSRAP Wins Tennessee Quality Award

The Department of Energy's Formerly Utilized Sites Remedial Action Program (FUSRAP) has received the Tennessee Quality Commitment Award for 1996.

At a ceremony held on October 24, 1996, in Nashville, Tennessee, the award was presented to Former Sites Restoration Division Director Les Price of the Department's Oak Ridge Office and FUSRAP Program Guidance and Assessment Manager Janice Allison of Bechtel National, Inc.(BNI), the prime contractor for FUSRAP.

The Quality Commitment Award recognizes organizations that have shown a serious commitment to using total quality principles and have demonstrated a solid approach to system-level quality management. Although the 132 recipients of Tennessee Quality Awards for 1996 included other DOE-Oak Ridge Office organizations and other Department contractors, the FUSRAP award is unique in that it represents a joint application and collaborative effort of a DOE entity and its contractor support.

For more information call Melyssa Noe at 423-241-3315 or Al Johnson at 301-903-7226.

Janice Allison, BNI/FUSRAP, and Les Price, DOE/Oak Ridge, with the Tennessee Quality Award Plaque.

EMAB Offers Recommendations Regarding EM Strategic Integration and the Ten Year Plan

The Environmental Management Advisory Board (EMAB) recently made substantial recommendations regarding EM budgeting and management systems and the EM Ten Year Plan. The two recommendations were presented to EM Assistant Secretary Alm during a Board meeting on October 23, 1996.

During the public meeting, EMAB strongly commended the central goals of the Ten Year Plan, which include accelerating the cleanup program to reduce risk and cost, accomplishing remediation more efficiently, providing well-defined strategic goals, and streamlining management systems.

The Board also recommended that the Department reevaluate each site's Ten Year Plan on an annual basis to permit better public involvement, further define EM program objectives and responsibilities, and develop a consistent public involvement program for site-specific and intersite issues. Furthermore, it encouraged the Department to assure compliance with the National Environmental Policy Act by developing a new environmental impact statement or by identifying existing statements that may cover the relevant impacts.

For more information contact James T. Melillo, Special Assistant to the Assistant Secretary, at 202-586-4400.

Contest Yields Motto for *EM Progress*

Over the past three months, EM voters submitted their choices and the tally is in! The winning motto for the *EM Progress* newsletter is:

"Reclaiming the Past to Secure the Future."

After extending the voting deadline to allow additional time for subscribers to have a voice in this decision, *EM Progress* readers voted 8-7 to narrowly edge out the other motto contender:

"EMbracing Environmental Excellence."

The winning motto will be prominently featured in the *EM Progress* nameplate. Since the winning margin was so close, "EMbracing Environmental Excellence" will be used as a footer, appearing on alternating pages—justice dictates a measure of inclusiveness in this case.

We feel that both mottos speak to the heart of the EM program and should be kept in mind as we move about our daily work lives. We hope you find them worthy.

For more information please contact Dave Simon at 202-586-4253 or e-mail to David.Simon@em.doe.gov.

Prevention, *continued from page 1*

ed during fiscal years 1994 and 1995 by integrating basic pollution prevention strategies into environmental restoration. Most of the strategies were relatively simple, low-cost technologies, including segregation of wastes, equipment and material reuse, efficient waste packaging techniques, and innovative management practices. These methods were most effective when initiated during project planning stages and evaluated throughout the project's life cycle.

The techniques implemented by these sites are described in a DOE Office of Environmental Restoration report titled, *The Complex-Wide Study on the Successful Integration of Pollution Prevention into the Environmental Restoration Program, Volumes I and II.* Released in October 1996, the document details 92 case studies from 26 of the Department's environmental restoration sites. In addition, 19 out of 24 sites provided a summary of pollution prevention programmatic elements within their individual environmental restoration programs. The second phase of this two-phased project will focus on actual cost savings realized from these case studies.

The pollution prevention techniques detailed in the report fall into one of the following general categories:

- segregation of materials,
- recycling and reuse,
- source reduction,
- volume reduction, and
- best management practices (BMPs).

Segregation of materials involves separating wastes (i.e., low-level radioactive waste from hazardous waste) to avoid the higher costs associated with disposal and treatment of mixed waste. Recycling and reuse of materials avoids the costs associated with disposal of primary and secondary waste from cleanup activities (i.e., personnel protective equipment, plastic sheeting, decontamination media, innovative sampling techniques, packaging materials) through process changes. Volume reduction involves compacting, evaporating, shearing, or crushing waste to reduce its volume and

Prevention, *continued on page 15*

Prevention, *continued from page 14*

associated disposal costs. BMPs are management practices, operational changes, material substitutions, and conservation practices that are implemented at the management level to reduce the generation and disposal of waste.

Examples of pollution prevention successes documented in the report include:

- About 1,300 cubic feet of low-level radioactive waste piping and trash and 7 cubic feet of hazardous waste were segregated from mixed waste sludge and debris at Battelle Columbus Laboratories Decommissioning Project during decommissioning of King Avenue Buildings 2 and 5. This method helped reduce the high costs associated with disposal of mixed waste.
- About 300,000 cubic feet of clean concrete was reused, and 21,000 cubic feet of clean scrap metal was recycled at the Hanford Site during decommissioning activities at Building 190B.
- About 40,000 cubic feet of low-level radioactive waste and sanitary waste was avoided at the Idaho National Engineering Laboratory during decommissioning of Auxiliary Reactor Area 2. Strategies included compacting or shearing low-level radioactive waste to reduce volume and scabbing concrete to remove surficial low-level radioactive waste contamination in order to reuse the concrete in other applications.
- About 2,600 cubic feet of State-regulated material and 3,400 cubic feet of sanitary waste were avoided at the Los Alamos National Laboratory by field screening excavated soils and using clean soils as backfill during restoration activities at the Zia Motor Pool facility. In addition, 1,600 cubic feet of hazardous waste was avoided by using reusable bulk waste containers instead of drums to package waste.
- About 5,800 cubic feet of low-level radioactive waste was avoided at the Portsmouth Gaseous Diffusion Plant during subsurface soil and groundwater investigations. The plant used the "direct push" sampling technology, which generated an average 2 cubic feet of waste soil per hole as opposed to the average 50 cubic feet of waste generated per hole using a conventional auger drill.
- About 200 cubic feet of hazardous waste was avoided at the Savannah River Site by replacing plastic sheeting with launderable tarps and tape with reusable cuffs (for personnel protective equipment) during environmental restoration activities.
- About 40,500 cubic feet of low-level radioactive waste was avoided at the Formerly Utilized Site Remedial Action Project - General Motors Site by using high-pressure water flushing with in situ inspection instruments to clean underground piping and to verify that the cleanup criteria was met.

In June 1996, the Department issued a Baseline Environmental Management Report to Congress stating that pollution prevention in environmental restoration could save the complex tens of billions of dollars. According to the *1996 Baseline Environmental Management Report*, environmental cleanup costs over the estimated life-cycle of the environmental management program could advance beyond $227 billion (including more than $63 billion to remediate soils and ground water, decontaminate buildings, and dispose of an estimated 29 million cubic meters of waste).

The Office of Environmental Restoration-commissioned study concurs with the *1996 Baseline Environmental Management Report* which stated that tens of billions of dollars could be saved complex-wide by applying P2 to DOE projects. This study also provides findings which suggest that P2 is being delivered as an integration function in support of a cleanup project rather than an independent initiative. The study goes on to say that P2 is being successfully integrated into cleanup projects but it suffers from a credibility gap. Project managers view P2 activities as competing for resources and delaying schedules, and attempting to measure performance of P2 is a daunting task.

The study makes the following recommendations to help achieve maximum integration and increased waste avoidance and cost savings during environmental restoration activities:

- Integrate pollution prevention principles into all environmental restoration projects at the planning/negotiation phase and evaluate pollution prevention implications during subsequent project phases.
- Incorporate pollution prevention methodology into the EM Project Manager's Handbook for Improved Project Definition.
- Continue to collect pollution prevention case studies and lessons learned for dissemination to the field.
- Consider mini-workshops at EM conferences or symposiums that discuss pollution prevention in environmental restoration implementation strategies and project management tools.
- Continue to issue fact sheets highlighting pollution prevention expectations and success of other DOE initiatives.

The complete study is available on the Internet through DOE's EM Home Page (www.em.doe.gov). For further information contact: Robert Fleming, EM-43, at 301-903-7627 or robert.fleming@em.doe.gov or Lisa Allmon-Burns, IT Corporation, at 513-782-4700 or lallmon@primax.net.

Credits

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Five-Year Argonne Cleanup Plan to Save $100 Million

On October 24, 1996, the Department of Energy and Argonne National Laboratory announced a new environmental cleanup plan that will save nearly $100 million while remediating existing environmental problems at Argonne's Illinois site in one-third of the time. "This will make Argonne one of the first major, multiprogram laboratories in the DOE system to complete its environmental restoration projects and wipe the books clean," said Secretary of Energy Hazel R. O'Leary.

According to Dean E. Eastman, Argonne's director and chief executive officer, the new accelerated plan will enable Argonne "to clean up all the currently known environmental problems at our Illinois site by the year 2001 for an additional $57 million." This is a savings almost $100 million and nearly 10 years. The previous plan would have required an additional $155 million, and cleanup at the site would not have been completed until the year 2010.

The new plan addresses about 50 remaining contaminated areas and 8 remaining "decontamination and decommissioning" projects. The contaminated areas include three former landfills, two former chemical waste disposal sites, drying ponds for sludge from water treatment plants, facilities previously used to store radioactive waste, and a hillside contaminated with lead from a former shooting range for the Argonne security force. The decontamination and decommissioning projects comprise six small retired nuclear reactors; one small retired particle accelerator; and three facilities formerly used to store, process, or examine radioactive materials.

For more information call Brian J. Quirke at 630-252-2423.

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RECLAIMING THE PAST TO SECURE THE FUTURE

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Look for the Spring 1997 issue of *EM Progress* to be distributed in late March!

EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 5 • Number 1 Winter 1996

EM Realigns to Meet Changing Times

Structural change is coming not only to the Environmental Management (EM) program, but also to the federal government as a whole. And while the comic strip "Dilbert" may satirize the travails of reorganization, there is much more to realignment than buzzwords and pat phrases. To shed insight on the changes EM is encountering now and will face in the future, *EM Progress* recently interviewed Assistant Secretary Tom Grumbly and Principal Deputy Assistant Secretary Rich Guimond.

"Undoubtedly this will take time," Grumbly says, "but we have to stick with it. The results will be worth it."

Both Assistant Secretary Grumbly and Principal Deputy Assistant Secretary Guimond believe that EM's realignment will benefit the entire organization after an initial period of turmoil. Grumbly noted that there is a major change occurring between employers and employees in the federal government, away from hierarchical systems and toward collegial methods of operation. These changes will help people control their lives in the workplace and better contribute to the mission of their Department. "Undoubtedly this will take time," he says, "but we have to stick with it. The results will be worth it. Government workers will feel more connected to their work on a daily basis as a result."

Principal Deputy Assistant Secretary Rich Guimond says empowerment will occur if people are willing to make active, constructive critiques which bring new ideas to the table.

Grumbly cites the advantage of the team concept where everyone in a room is working together to solve a problem, rather than relying on a hierarchical system where each piece of work must be reviewed by a different layer of management. This new team system has already been used successfully on certain projects like foreign research reactor spent nuclear fuel. He uses a sports analogy when describing how to make EM's new organization work effectively: teams work best when the players are passing the ball to each other. The bottom line: the better EM employees are at working together, the more successful both the organization and the individual will be.

Government must be broken down into manageable elements, and this concept is central to the EM reorganization. Many federal employees came into the government to see things change, to work to make things better for other people, Grumbly observes. That is what the EM reorganization is ultimately about: making the program operate more effectively for its employees, managers, and the country.

According to Assistant Secretary Tom Grumbly, government must be broken down into manageable elements.

Continued on page 10

In This Issue...

EM Tackles Reorganization 1

DOE, Navy Reach Settlement with State of Idaho 2

EPA Commends Tri-Organization Cleanup 2

Rocky Flats Outlines New Vision 3

Site Success Stories 4-6

Fernald Analyzes Its Work Processes 7

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Interagency Cleanup Efforts Achieve Significant Results

The Environmental Protection Agency's (EPA) Region IV Administrator John H. Hankinson, Jr. has commended the efforts of federal and state agencies working together on environmental restoration projects at the Oak Ridge Reservation and Paducah Gaseous Diffusion Plant. In Oak Ridge, TN, the Department of Energy (DOE) and EPA teamed with the Tennessee Department of Environment and Conservation (TDEC), while in Paducah, KY, the Natural Resources and Environmental Protection Cabinet joined DOE and EPA on several successful remediation ventures. Some highlights follow:

* * *

Expedited Action at Oak Ridge

Waste disposal areas at the Oak Ridge National Laboratory release strontium-90 into White Oak Creek and its tributaries, with the creek discharging off-site into the Clinch River. DOE, EPA, and TDEC formed an "empowered team" and were successful in reducing the amount of strontium-90 leaving the site by 40% through remediation projects in both the Waste Area Grouping 5 seep areas and the Corehole 8 plume. Both areas were remediated in 14 months or less. Says Hankinson, "To achieve these results in approximately 1.5 years, with significant cost savings, is truly an outstanding accomplishment."

* * *

ROD for Oak Ridge's Lower East Fork Poplar Creek

A remedy selection project teamed DOE, EPA, and TDEC on community outreach. DOE formed a citizen working group. The three organizations held four public meetings and conducted numerous meetings with public officials and interested groups before selecting a remedy for the creek. The Record of Decision (ROD) was signed in August 1995. "Our staffs have demonstrated that progress can be made through cooperation," says Hankinson of the team effort.

* * *

ROD for Paducah's Northeast Plume

EPA and the State of Kentucky approved a ROD to construct and operate a groundwater containment system in the Northeast Plume area of the site. The system will trap and treat groundwater contaminated with trichloroethene.

On October 5, 1994, the three agencies met, evaluated the data, and decided to pursue an interim remedial action. Eight months later, the ROD was signed. "Our staffs demonstrated the ability to cut through bureaucratic procedures, reducing paperwork to reach a decision for site cleanup....The cooperation between our three organizations is an example of how government agencies can work effectively and expediently towards a common goal," says Hankinson. By using existing cooling towers to remediate groundwater, DOE will save $2.5 million.

* * *

Groundwater Remediation at Paducah

After the ROD for the Northwest plume was approved, DOE constructed the groundwater containment system and EPA and the State of Kentucky approved its interim remediation report. This cleanup project was one of four RODs signed since FY 1993 at the Plant; three more are possible for FY 1996. "EPA recognizes that site remediation is the ultimate objective of the efforts between our three agencies," says Hankinson. "We also realize that reaching RODs is a significant hurdle in the administrative process for reaching remedial action."

For more information contact Edward M. Carreras at 404-347-3555, ext. 6436.

DOE and Navy Settle with the State of Idaho on Spent Fuel and Nuclear Waste

After several months of intensive negotiations, the Departments of Energy (DOE) and Navy reached agreement with the State of Idaho on spent fuel and radioactive waste issues at the Idaho National Engineering Laboratory (INEL). The terms of the agreement were incorporated into a Consent Order signed October 17, 1995, bringing the Federal Government's long-standing litigation with the State to a close.

The Federal Government's negotiating team was led by DOE Assistant Secretary of Environmental Management (EM) Thomas Grumbly, DOE General Counsel Robert Nordhaus, and Navy General Counsel Stephen Honigman. Mark Frei, a member of EM's negotiating team, offered his assessment of the process: "Negotiations were driven by a set of guiding principles and interests on both sides of the table, which at times seemed to make the prospects for resolving the issues

Continued on page 11

Perspectives

This page often features a guest editorial as part of the newsletter's regular series of guest editorials, "Perspectives." This feature allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Dave Simon, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585; 202-586-4253. Fax: 202-586-0293.

Three Agencies Join to Delineate Conceptual Vision for Rocky Flats

The Department of Energy (DOE), State of Colorado, and Environmental Protection Agency (EPA) released a draft conceptual vision on November 9, 1995, which will be used to guide the future work of the Rocky Flats Environmental Technology Site.

Representatives from the Colorado State Governor's Office, the Office of the Lieutenant Governor, the Colorado Department of Public Health and Environment, the EPA's national and regional offices, DOE's national and site offices, and the Defense Nuclear Facilities Safety Board attended an October 10-11, 1995 "workout" to delineate the draft vision. The vision will help guide all site activities, including cleanup, plutonium consolidation, safety, conversion, and future land use. Moreover, it will be included in future site regulatory agreements and orders. The vision has been released for public comment and will be finalized in a January 1996 workout session.

Vision Assumptions

The vision is based on key assumptions which include:

- There is no alternative storage or disposal site for plutonium or other special nuclear materials. Consequently, special nuclear materials (SNM) must be stored on-site until another location becomes available. All SNM must be moved off-site by 2015
- No additional plutonium will be moved on-site
- DOE officials, regulators, and the public will work together to decide which other wastes (not SNM) will be moved off-site during the cleanup process
- On-site wastes will be managed safely
- The site will not accept substantial quantities of other sites' waste
- The site will be cleaned up to meet anticipated land and water uses

Intermediate Cleanup

Site cleanup will proceed in two phases: intermediate and final. Intermediate site condition will be achieved when:

- All plutonium (including SNM) and containerized waste (including transuranic and transuranic mixed waste) are in safe, stable storage that can be used long-term, if necessary
- Most buildings are demolished and/or covered, unless needed for waste storage or alternate industrial use
- Two buildings are left for plutonium and waste storage
- All major cleanup activities are completed, except in storage areas currently in use
- There is minimal site infrastructure left
- The number of workers has dropped from 5,000 to approximately 300
- The operating budget has dropped from $600 million to less than $60 million

Final Cleanup

Final site condition will be achieved when:

- There are three or four capped areas left: one or two existing landfills, the 800 area, and the "protected area"
- Groundwater and surface water are monitored and controlled
- All transuranic and transuranic mixed waste has been consolidated in a safe, on-site storage facility and is awaiting off-site disposal
- Low-level and low-level mixed waste has been disposed of in on-site landfills and capped
- Land in Area 1 is ready for industrial use
- Land in Areas 2, 3, and 4 is designated as open space

For more information contact Patrick Etchart at 303-966-5993.

The Vision at a Glance

Key provisions of the vision are as follows:

- All stored plutonium and other SNM will be moved off-site no later than 2015
- No DOE-operated building will remain on-site
- Buildings which have been converted to alternate industrial uses can remain on-site
- DOE will remediate the site more quickly than planned
- Additional waste treatment or removal is possible, if site conditions should change significantly

Cleanup Stages

The cleanup will proceed in two phases:

Completed

Intermediate site condition

- ☑ Major environmental remediation activities
- ☑ Decontamination and decommissioning
- ☐ SNM and containerized waste remain on-site

Final site condition

- ☑ SNM and containerized waste are moved off-site
- ☐ Maintenance of site landfills

Site Success Stories...Site Success Stories...Site

Purex Plant Marks Progress in Deactivation Effort

Deactivation of the Hanford site's plutonium-uranium (PUREX) and uranium trioxide (UO_3) plants has reached the halfway mark. From 1955 to 1990, the PUREX plant produced plutonium and the UO_3 plant converted byproduct uranium nitrate to a uranium trioxide powder. The two plants were shut down in 1990 to comply with regulatory changes. Deactivation efforts began in April 1992 when the Department of Energy (DOE) hired independent technical experts to review the technical and safety requirements involved in cleaning up and shutting down the facilities. The experts' recommendations were used in developing a deactivation plan. Accomplishments include:

One of the containers of nitric acid shipped to England for reuse. Each container housed approximately 4,000 gallons of fluid.

- *Transferring 3.1 tons of highly radioactive spent nuclear fuel to Hanford's K-Basins.* The move, which was incident-free, took two years of planning, coordinating with regulators and stakeholders, and computer modeling. In addition, 52 pieces of fuel which had previously been inaccessible were removed by the plant's remote-controlled overhead crane.

- *Beginning treatment of 20,000 gallons of uranium-contaminated solvent.* On September 27, 1995, a tank truck left Hanford with the first of six shipments bound for a commercial waste treatment vendor. The material will be incinerated and its heat used to generate electricity.

- *Shipping 187,000 gallons of uranium-contaminated nitric acid to England for reuse.* On November 6, 1995, the 50th and final container was shipped to a commercial British facility. Sending the acid off-site saved the site $37 million and shortened the deactivation timeline by 10 months. Stakeholders participated in this activity by offering comments on an environmental assessment and attending meetings held at potential ports.

- *Removing 577 bags of plutonium-contaminated equipment from glove boxes.* As of September 1995, workers had removed equipment contaminated with more than 1.5 kilograms of plutonium from PUREX glove boxes. Operators accomplished this task without a single skin contamination incident.

- *Verifying 1,740 endpoints for UO_3 facility turnover.* After the verification, the UO_3 calcining facility was turned over to the Office of Environmental Management's environmental restoration project. Removing hazardous materials and all but residual amounts of uranium oxide powder allowed the facility's hazard classification to be reduced from a low hazard nuclear facility to an industrial facility. Surveillance and maintenance overhead costs for this building have been reduced 99%, from $4 million to $40,000 a year.

PUREX, which is DOE's first major deactivation project, will be finished in September 1997. The two plants will be locked, unoccupied, and monitored quarterly; they will not pose any environmental or safety hazards and can remain in this state for a decade or longer, if necessary, until dispositioned.

For more information contact Brad Nelson at 301-903-4393.

On October 12th, 3.1 tons of highly radioactive spent nuclear fuel was transferred from PUREX to the K-Basins via railcar.

Site Success Stories...Site Success Stories...Site

Storm Drain Remediation Is a Success at Stanford

Workers at the Stanford Linear Accelerator Center (SLAC) have successfully removed polychlorinated biphenyls (PCBs) and lead contamination from SLAC's storm drain system. SLAC, which has conducted high-energy physics research since the 1960s, has used dielectric fluid containing PCBs in transformers and various forms of lead as shielding material. Over time, these materials washed into the storm drain and accumulated in the sediment. SLAC has since improved its housekeeping practices and eliminated the use of PCB-containing oil in transformers.

PCBs and elevated concentrations of lead were first discovered in an unlined drainage channel next to SLAC. The 325-foot channel, which is also owned by Stanford University, receives much of SLAC's stormwater discharge and flows into a tributary of San Francisquito Creek. Workers characterized drainage channel soils, finding contaminant concentrations as high as 370 milligrams/kilogram (mg/kg) for PCBs and 149 mg/kg for lead. In addition, PCBs were discovered in channel plants, primarily in their roots.

Workers also sampled sediments in SLAC's stormwater catch basins, discovering concentrations as high as 220 mg/kg for PCBs and 2,800 mg/kg for lead, although most locations had much lower concentrations.

Environmental restoration efforts lasted three months and were completed in October 1995. Workers removed all visible sediment from more than 280 storm drain components, including catch basins, drain sumps, oil-water separators, and open concrete channels located throughout SLAC. Workers excavated up to four feet of contaminated soil in parts of the channel. More than 600 cubic yards of contaminated materials were shipped off-site for disposal.

Subsequent tests confirmed that remaining PCB concentrations in the channel were less than the risk-based one mg/kg cleanup level. Workers then backfilled the channel with clean material, installed erosion controls, and regraded and revegetated the area to restore it to natural conditions.

For more information contact Helen Nuckolls at 415-926-3371.

Brookhaven Completes Capping Project

Brookhaven National Laboratory has finished capping its six-acre landfill ahead of schedule. The landfill, which was used as a waste disposal site from 1967 until 1990, received mostly municipal-type wastes, but also small amounts of radioactive material, including short-lived radionuclides, building materials, and possible chemical waste. Workers surveyed on-site areas, excavated test pits, and analyzed geotechnical samples to find suitable soil for use as fill on the project. Concrete and asphalt debris from other construction projects were used in the landfill's rough grading. Using on-site materials enabled the site to save approximately $1 million, reducing the project's cost to $2.6 million.

For more information contact Alan Raphael at 516-282-5854.

Site History Made at Fernald

Stakeholders and the area news media were notified when the Fernald site logged three million work hours without a single lost time incident. This precedent-setting milestone was reached November 17, 1995, at 2 p.m. For more information contact Kim Chaney at 301-903-2778.

The Latest from Lawrence Livermore

Laboratory Completes First Remediation of Unsaturated Zone

The Lawrence Livermore National Laboratory has finished remediating the unsaturated zone of an old gasoline spill area at its main site. Workers used adaptive pumping, vapor extraction, underground steaming, and electrical heating to remove more than 10,000 gallons of gasoline from groundwater and unsaturated sediment in the spill area over a five-year period. Most of the gasoline was removed in 1993. Workers used underground steaming and electrical heating technologies to increase the mobility of contaminants and then removed the substances using groundwater and vapor extraction.

The Environmental Protection Agency, California Regional Water Quality Control Board, and California Department of Toxic Substances Control approved closure of the unsaturated zone, a first for the Laboratory. Workers will continue to extract groundwater to remove remaining gasoline and low levels of trichloroethylene.

For more information contact Bob Bainer at 510-422-4635.

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Groundwater Cleanup Ahead of Schedule at Laboratory

Two treatment facilities at the Laboratory are treating contaminated groundwater more quickly than originally expected. Treatment Facility B, located on the western boundary of the Laboratory, has reduced concentrations of trichloroethylene from as high as 500 to 50 parts per billion in three years, removing more than 11 kilograms of the chemical and other solvents from the groundwater. Scientists had projected that only 3.5 kilograms

Continued on page 7

Site Success Stories...Site Success Stories...Site

FUSRAP Completes 20th Site

The Formerly Utilized Sites Remedial Action Program (FUSRAP) has completed cleanup of its 20th site; the program is responsible for 46 sites nationwide. Six sites were completed in 1995.

The most recently remediated site, General Motors (GM) in Adrian, MI, was used in the late 1950s and early 1960s to extrude uranium metal for nuclear reactors at the Hanford and Savannah River sites. The site is now used to manufacture automotive parts for GM.

The isolated location of contaminants—primarily floor drains, sumps, and pipes—coupled with the site's commercial activities made GM one of FUSRAP's most technically challenging cleanups to date. Approximately 3,500 cubic feet of contaminated materials were removed and shipped to Envirocare of Utah for disposal. The cost of the project was $1.9 million.

For more information contact Melyssa Noe at 615-241-3315.

FUSRAP team members celebrate their 20th cleanup. Pictured here are (first row, left to right): Dick Harbert, BNI Project Manager; and Les Price, DOE Project Manager. On the second row, from left to right are: Bill Seay, DOE Deputy Project Manager; Jim Kopotic, DOE Site Manager; John Waddell, SAIC Project Manager; and Gerry Palaw, BNI Site Manager.

DOE Signs Cooperative Agreement with UK Counterpart

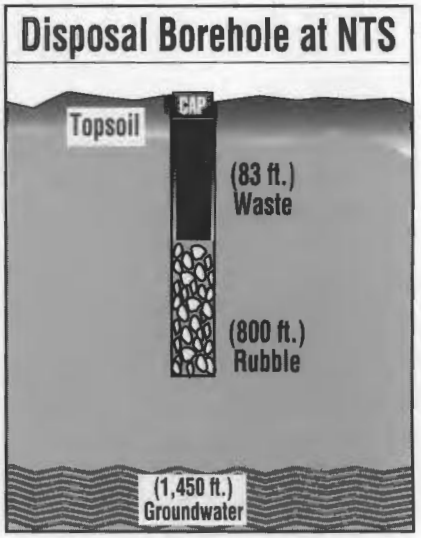
The Department of Energy (DOE) has signed a cooperative agreement with the United Kingdom Department of Trade and Industry (DTI). The agreement, which was signed in July 1995, brings DTI's Decommissioning and Radioactive Waste Management Operations program and DOE's Environmental Management program together to share information on nuclear decommissioning and cleanup issues. Potential areas for collaboration include liquid metal management, vitrification of high-level waste, low-level waste performance assessments, and graphite reactor and glove box decommissioning. In January 1996 the two groups will meet to discuss management issues and tour a few DTI sites.

For more information contact Emma Lopez-Cardona at 202-586-7601.

DOE Closes Waste Disposal Unit at Nevada Test Site

Department of Energy (DOE) workers have closed a waste disposal unit located in the east-central part of the Nevada Test Site (NTS). Workers had originally drilled the site in March 1967 for a proposed nuclear experiment, but abandoned the project when the hole unexpectedly collapsed at the 836 foot mark. The unit, U-3fi, was used to dispose of approximately 83 cubic yards of low-level radioactive and hazardous wastes between 1970 and 1989. Scientists conducted closure studies in 1994, determining that removing the waste might cause more risk to workers, public, and the environment than leaving it in place; and that the closest groundwater lay 1,200 feet below the waste. Because of these factors and the area's arid environment, DOE decided to close the unit in place. Workers plugged and capped the hole, which will be monitored for at least 10 years to ensure there is no migration of wastes.

For more information contact Kevin Rohrer at 702-295-0197.



Fernald Site Improves Work Practices

A new project has helped the Fernald Environmental Management Project (FEMP) improve its work processes and enhance worker productivity. Since the Enhanced Work Planning Initiative began in July 1995, the site has experienced a 33 percent drop in its backlog of open maintenance work requests and a 30 percent drop in asbestos-related work requests; removed 12,000 preventive maintenance items; and eliminated several unnecessary forms and permits.

Fernald workers perform preventive maintenance on a pump.

Fernald workers remove a dust collector from a former production building.

Fernald is the third site to demonstrate the Department of Energy (DOE) project, which was developed as a means to involve all responsible work groups in the work planning process.

FEMP selected the Remediation Support Operations Division as the best candidate for the initiative. A core team of maintenance personnel was tapped to analyze planning activities and procedures. The group targeted "non-project" maintenance activities because of backlogged work orders and staff frustrations experienced while accomplishing this work. After examining current planning practices, the team discovered that while maintenance work had inevitably been planned, last-minute crises would often occur. Work would then have

Continued on page 9

Livermore *continued from page 5*

would be removed in this same timeframe. To finish the cleanup, workers installed extra wells and pipelines in the area in September 1995, establishing control of the off-site plume.

Treatment Facility A, located in the southwest part of the Laboratory, has been successful in reducing tetrachloroethylene concentrations in one unit by an order of magnitude. In addition, workers have pulled back a chemical plume measured at 500 parts per billion more than 1,000 feet in another unit and are containing it. Construction of area groundwater wells was finished by the end of 1995, ensuring total control of the off-site plume.

The State of California is considering adopting a policy that would allow sites to maintain limited containment zones where residual groundwater contamination exceeds drinking water standards. If this policy is implemented, the site may be able to meet containment goals at Treatment Facility A within the next five years.

For more information contact
Fred Hoffman at 510-423-6745.

* * *

Laboratory Uses Algorithm to Plan Groundwater Sampling

A cost-effective sampling algorithm is helping the Laboratory schedule groundwater monitoring to minimize cost but still meet remedial and regulatory goals. The Laboratory has been using the algorithm since 1992 to track monitoring of the site's more than 700 wells which are located at its two Comprehensive Environmental Response, Compensation and Liability Act sites and nearby off-site areas. Since the algorithm has been implemented, the number of routine monitoring samplings for volatile organic compounds at the Laboratory's main site has dropped by 50 percent.

The Savannah River site is currently evaluating an upgraded version of the algorithm, while the Pantex and Paducah sites are customizing it for their own use.

For more information contact
Virginia Johnson at 510-423-2005.

* * *

New Sampling System in Use at Laboratory

The Laboratory is using a new instrumentation and sampling system to monitor the effectiveness of soil cleanup at Building 518. The system, a membrane that carries sampling instruments down an uncased borehole, is measuring the effectiveness of soil vapor extraction at removing 150 kilograms of volatile organic compounds from area soil. By using this system, the Laboratory expects to streamline the cleanup process and possibly eliminate final sediment soil sampling.

For more information contact
Maureen Ridley at 510-422-3593.

Oak Ridge's K-25 Site Finds New Uses for Metals

The Oak Ridge Reservation's mission change has left it with an unexpected resource: more than 250,000 tons of metal from the K-25 Site, which can be recycled. The metals include steel; copper; nickel; aluminum; and monel, an alloy of nickel, copper, iron and manganese.

Gaseous diffusion plant process equipment at Oak Ridge's K-25 Site contain millions of pounds of metal which could be recycled.

The site's Metal Recycle Facility Re-Use Initiative also seeks to identify working components—such as motors and valves—that could be removed and sold for reuse in other locations. Some of the metal and components are radioactively contaminated and must first be decontaminated, depending on how they will be used when sold or recycled. Oak Ridge officials estimate that when the metal is recycled it could be worth about $2 billion, versus $200 million if sold as scrap.

The Department of Energy, which would be the largest potential customer for the recycled metal, needs waste containers and drums, reinforcing bars for concrete, casks, and other special containers to contain high-level waste, all of which could be made from the K-25 metals. In this case, many of the contaminated metals and components would not require cleaning since they would become recontaminated during use.

This recycling program, which will reduce the risk to the environment and human health during the decontamination and decommissioning of the K-25 Site, has already demonstrated its technical feasibility. In November 1995, Oak Ridge released six surplus motors to American Ecology for decontamination and potential recycling by the private sector.

For more information contact Walter Perry at 423-241-6417.

Albuquerque Site Receives Hammer Award

The Albuquerque Uranium Mill Tailings Remedial Action (UMTRA) Project site received one of three National Performance Review "Hammer Awards" presented to Department of Energy (DOE) organizations on October 24, 1995. The awards were created by Vice President Al Gore to recognize employee efforts to create a government that works better and costs less.

DOE Secretary Hazel O'Leary presented DOE Albuquerque Operations Manager Bruce Twining with the award for the UMTRA Project's Cost Reduction/Productivity Improvement Program. Since its inception, the program has saved or avoided spending $70 million. Employees, who participate in the program by suggesting ways to improve performance and reduce costs, receive no compensation for their input. In 1995, Federal and contractor team members submitted 183 ideas which saved $10.3 million, or eleven percent of the project's annual Federal funding.

For more information contact Melanie J. Majors at 505-880-2520.

NRC Licenses UMTRA Project Site

The Nuclear Regulatory Commission has accepted the Department of Energy's (DOE) long-term surveillance plan for the Uranium Mill Tailings Remedial Action Project site at Lakeview, OR. DOE finished cleaning up the site in 1989, stabilizing nearly one million cubic yards of contaminated materials, and is responsible for long-term care and maintenance of the disposal cell. The State of Oregon has transferred the deed and title for the disposal site land to the Federal Government.

For more information contact Bernard Pleau at 505-845-5951.

DOE, PMI Partner to Promote Productivity

The Department of Energy and Project Management Institute affirmed their commitment to project planning and control by signing a partnering agreement October 18, 1995. The agreement identifies goals the two groups share in their work to advance project management.

For more information contact Jeffrey Wilklow at 202-682-3100.

DOE Transfers Technology to Small Business

The Department of Energy (DOE) transferred $2 million worth of information technology to a small, woman-owned business in October 1995 as part of its continuing commitment to provide research and technology to private industry.

The business, Cavalier Development Company, which is based in Nokesville, VA, received computerized professional development modules created by Westinghouse Electric Corporation for DOE's Waste Isolation Pilot Plant near Carlsbad, NM. The company will modify the courses and market them to the private sector. The Carlsbad Area Office and Westinghouse have made more than 183 technology transfers to date, about a third to small, disadvantaged, or women-owned businesses.

For more information contact Patti Crockett at 505-234-7326.

DOE Assistant Secretary for Environmental Management Tom Grumbly presents Patricia Guggenheimer, president of Cavalier Development Company, with computer-based training courses.

Preventing Pollution and Minimizing Waste in the Cleanup of the DOE Complex

As the Department of Energy's (DOE) Environmental Management (EM) program cleans up sites across the nation, it generates large quantities of nuclear waste which must be treated and disposed of. Minimizing waste and preventing pollution while remediating these wastes are high priorities for the program. The *1995 Baseline Environmental Management Report* projects that EM could save $24 billion over the life of the cleanup effort by applying pollution prevention and waste minimization principles to all of its activities.

To accomplish this, EM has undertaken several initiatives, which include:

- *Developing programs:* EM's Office of Waste Minimization has created initiatives to help DOE waste generators comply with regulatory requirements.
- *Providing guidance:* EM's Office of Environmental Restoration (ER) has published information on how to create a pollution prevention and waste minimization program, including information on establishing budgets, allocating resources, and setting goals.
- *Assessing progress:* ER has also begun assessing past environmental restoration activities to create a baseline for measuring future progress of site-specific pollution prevention and waste minimization plans. This effort will be completed this fiscal year.

For more information contact Bob Fleming at 301-903-7627 or David Erne at 301-916-7273.

Fernald *continued from page 7*

to be postponed because of conflicting priorities, inadequate permitting, medical or training requirements, lack of materials, or other issues.

To resolve this problem, the team developed a thorough, easy-to-understand work package for craft personnel that contained all the information supervisors would need to complete maintenance assignments. By reviewing all information, workers should be able to anticipate and avert last-minute crises. In addition, the team developed a new process to plan work and initiated a new work package form to allow early feedback on permits and requirements needed to complete a job. The new form, which was implemented in November 1995, will track work from initiation to completion, facilitate more efficient prioritization, and give support groups a means to provide input. The team also began holding daily meetings with representatives from all groups supporting maintenance planning to discuss work requests and preview work areas to resolve potential problems.

With help from DOE's Onsite Technical Assistance Program, FEMP is sharing successes, experiences, and lessons learned throughout the DOE complex. FEMP is also sharing the process with other groups at Fernald to improve links between planning organizations and strengthen feedback.

For more information contact Gary Stegner at 513-648-3153.

Realignment *from page 1*

Guimond also noted that implementing the team concept and streamlining operations are crucial to creating more rewarding work. "Everybody will have to put a fair amount of effort" into making the changes happen, he says, but once everyone understands how to function in the new team environment, EM will be a "better run organization. We need time to get the new roles and team functions down. What we're trying to do is empower employees, get them to take leadership, take risks."

The degree to which the new organization will be successful, Guimond says, is inversely proportional to the level of fault-finding. As the EM organization improves, complaints about how it operates should decrease. "If something is wrong, employees should ask what they can do to fix it. Build a plan, present it, and carry it out," he says. Empowerment will occur if people are willing to move from aloof criticism of the program to active, constructive critiques which bring new ideas to the table.

Guimond paraphrases a Colin Powell line to buttress his position: "If something goes wrong, what can I do to make it better—improve the outcome and mitigate problems?" If everybody approached their jobs with this perspective, "staff would be destined for success," he predicts. "We need to have positive energy to solve problems."

As the reorganization unfolds, Guimond would like to see less focus on what he calls the "microcorners." He says that in the past, rewards were given for working a "micropiece" on the technical side of an issue. Now everyone must think more broadly and ask, "where does EM need to go?" All the program goals need to be interwoven to create a bigger picture which must be continually revised to reflect changing goals.

Comparisons between sites can be useful in establishing broader goals, Guimond continues, and a concise slogan would help knit the program tightly together. "We're looking for an analogy to the National Aeronautics and Space Administration's goal of 'landing a man on the moon in under ten years'. We need a challenge that is meaningful

"What we're trying to do is empower employees, get them to take leadership, take risks," says Guimond.

and uplifting, but not impossible. Then we coin it and let nothing get in its way." For example, is it possible to do 95 percent of the work listed in the *Baseline Environmental Management Report* in less than 20 years for under $100 billion?

EM Slogan

Create a slogan to help EM as it realigns to face the future (see related story on this page). Reader interest permitting, *EM Progress* will publish the top three picks in the next issue. Send your ideas to Dave Simon at the Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585; 202-586-4253. Fax: 202-586-0293. Dave's e-mail is: David.Simon@.em.doe.gov.

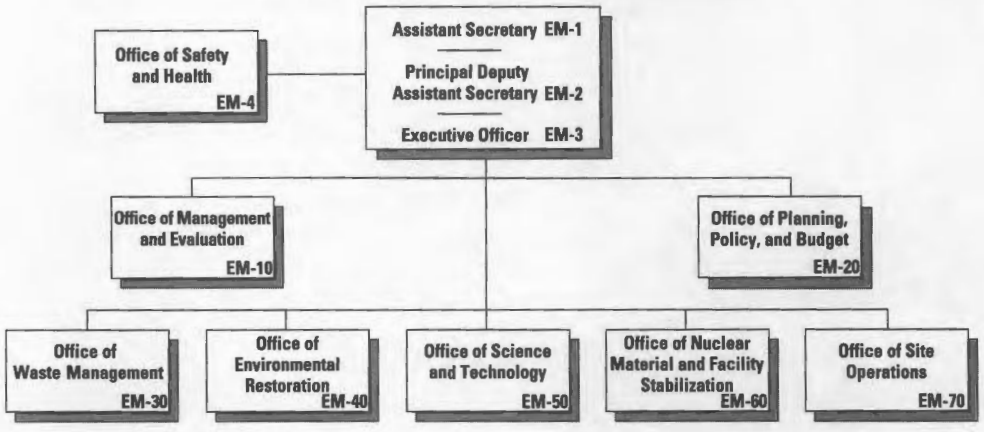
Guimond would like to see both the Field and Headquarters avoid parochialism and evidence willingness to change. If skills improve through teamwork, whether at Headquarters, or between the Field and Headquarters, then EM achieves synergism through the new team system, he observes. "This is the whole crux: can we achieve synergism? I hope that people will have a healthy cynicism, but not be cynical. We all must lead."

Grumbly acknowledges the disruption the reorganization is causing and hopes EM moves through the changes quickly. He also explained his perspective on two of the newly-created offices (Site Operations and the Office of Planning, Policy, and Budget). Grumbly's rationale for creating this latter office was to improve how the budget is expressed through policy and bring the public into the budget process. When EM had the opportunity to bring Dan Berkovitz on board as Deputy Assistant Secretary of this new office, late during the reorganization, it was a good time and place to put these functions together, according to Grumbly.

As to the newly-formed Site Operations Office, Grumbly believes that it will help improve the relationship between the Field and Headquarters. This divide still needs to be bridged, he says.

For more information contact Dave Simon at 202-586-4253.

Office of Environmental Management



Litigation *continued from page 2*

tentative at best." According to Frei, the Federal Government's interests centered around preserving national security, continuing future environmental protection, investing public funds effectively, and ensuring equitable treatment of other States by the DOE and Navy. The State's key interests included securing guarantees from the Federal Government on dates for removal of all spent nuclear fuel and other wastes from INEL, enhancing environmental restoration activities at INEL, and increasing economic investment in southeastern Idaho.

In the negotiations, "difficult concessions were made by both parties, enabling what has become a very sound and fair settlement," Frei said. The State's interest in establishing concrete dates for some of the proposed activities had been an area of particular contention, but DOE and Idaho resolved the matter by establishing nonenforceable target dates. Other areas of conflict included the extent of enforceable actions DOE would be required to meet, such as the Government's payment obligation and the number and types of spent fuel shipments permissible in the near- and longer-term. Negotiations were complicated by the evolving status of the litigation, with action occurring at both the District Court and Court of Appeals levels and a pending congressional mandate to ship naval spent fuel to INEL.

Under the agreement, the State has agreed to the following:

- Allowing naval spent fuel shipments to resume immediately
- Accepting up to 575 naval fuel shipments, or 55 metric tons of heavy metal (MTHM), through the year 2035
- Receiving only essential DOE spent fuel shipments until an out-of-state repository or interim storage facility will accept the fuel
- Accepting up to 61 shipments of foreign research reactor spent nuclear fuel through December 31, 2000, if the Federal Government adopts an acceptance policy for nonproliferation and national security purposes
- Limiting the amount of DOE-owned spent fuel sent to the site after December 31, 2000. No more than 55 MTHM of DOE-owned spent fuel, or about 497 truck shipments, would be accepted
- Fully supporting DOE's efforts to obtain the permits and approvals necessary for it to meet its commitments under the agreement. In addition, the State has agreed to help in any other third party lawsuits brought against the Federal Government on the adequacy of the 1995 Programmatic Spent Nuclear Fuel Management and INEL Environmental Impact Statement and Record of Decision

In return for these shipments to INEL, DOE has made a number of commitments to the State. Failure to meet any of these initiatives would result in suspension of DOE shipments. Key DOE commitments at INEL include:

- Removing all transuranic waste between April 30, 1995 and 2018
- Completing removal of all spent fuel by 2035
- Finishing treatment of all calcined high-level waste by 2035
- Ensuring a mixed waste treatment facility for transuranic and alpha-contaminated mixed low-level waste is operational by 2003
- Transferring all spent fuel from wet to dry storage by 2023
- Transferring equivalent numbers of spent fuel shipments between the Savannah River site and INEL each year
- Establishing INEL as DOE's lead laboratory for spent fuel research and development

Undertaking these initiatives will cost DOE approximately $200 million and the Navy $110 million over the next five years. In addition, DOE will provide Idaho $30 million to help diversify the economy in the southeastern part of the State. If the Government should fail to remove all the spent nuclear fuel to an out-of-state facility by January 1, 2035, the Government will also be obligated to pay the State $60,000 a day, pending Congressional appropriations.

Assistant Secretary Thomas Grumbly said of the settlement: "The overriding national security interest necessitated that DOE and the Navy negotiate this agreement. As a result of this interest, the agreement should not be viewed by other states as precedent-setting."

For more information contact Mark Frei at 301-903-7201.

Credits

EM Progress is published quarterly. To learn more about the newsletter, or how to submit an article, please contact either Dave Simon or Holly Larson at the phone numbers listed below.

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Rover Facility Deactivation Plan to Eliminate Criticality Concerns

For the contractor slated to deactivate the Rover Facility, located at the Idaho National Engineering Laboratory, criticality risks are of paramount concern. The Rover Facility, which was shut down in 1984, houses a substantial amount of uranium in its processing lines, vessels, and related equipment. During its single year of operation from 1983 to 1984, the facility recovered approximately 3,000 kilograms of enriched uranium used in space vehicle engine tests at the Nevada Test Site.

The Laboratory's contractor, Lockheed Idaho Technologies, estimated that deactivating the facility would take nine years and cost $53,000,000. This baseline did not meet the Department of Energy's needs to reduce criticality risks quickly and control costs. By trading conventional for innovative methods, Lockheed was able to outline a deactivation approach which would be finished in four years, cost $23,000,000, and reduce worker radiation exposure by two-thirds. The new plan stresses using available, rather than purchased, equipment; initiating activities which are within the safety envelope; expanding the safety envelope when required; and retaining safe practices and remote activities.

For more information contact Thomas J. Zielinski at 208-526-7547 or Robin L. Sweeney at 301-903-7991.

EM PROGRESS

Comments

We are interested in receiving your comments—what you like and what you don't like—about *EM Progress*. Your views, comments, and suggestions are appreciated.

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Look for the Spring 1996 issue of *EM Progress* to be distributed in early April!

DOE/EM-0315

EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 5 • Number 4 Fall 1996

Vitrification Begins at West Valley

On July 5, 1996, the first stainless steel canister was filled with vitrified high-level radioactive waste at the West Valley Demonstration Project. Approximately 300 canisters will be filled by the project's completion in 1998. The filled canisters will be stored onsite until a Federal repository has been identified.

The West Valley Demonstration Project is located near West Valley, New York, at the site of the only commercial nuclear fuel reprocessing facility ever to operate in the Nation. The facility was closed in 1972.

In 1980, Congress passed Public Law 96-368, authorizing the Department of Energy to initiate a high-level radioactive waste management demonstration project. The Department subsequently designed, constructed, and operated a full-scale test vitrification facility; converted the test facility to the final shielded facility; and pretreated high-level waste to prepare it for vitrification.

For more information contact Mark Rawlings at 301-903-7452.

The first glass-filled canister of high-level waste is positioned for placement in the storage racks of the High-Level Waste Interim Storage Facility at the West Valley Demonstration Project.

Model Airplanes Photograph Portsmouth Plant

When scientists at the Portsmouth Gaseous Diffusion Plant needed to update aerial photographs of the plant, they decided to use an unconventional tool: model airplanes. Remote-controlled and unmanned aerial vehicles, much more sophisticated than their toy kin, have been used by scientists for several years to gather data such as aerial photography, video imagery, and airborne geophysical surveys.

Three remote-controlled planes, each equipped with a video or 35-millimeter camera placed in the nose or underneath the model airplane, were used for the project. All three airplanes, which were manufactured by BAI Aerosystems, Inc., are equipped with the GPS autopilot system. This navigation system allows the plane to fly automatically to preset waypoints and to return to base if the plane loses contact with the radio controller.

Airplanes, *continued on page 3*

In This Issue...

Re-engineering the Office of Waste Management 2

Hanford's Effluent Treatment Facility Proves a Success 3

Using Tomorrow's Technologies to Clean Up Today's Wastes 10

FUSRAP Cleanup Reaches Halfway Mark 11

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Inter-agency Partnering Saves Time and Money in Implementing Hanford 100-BC Cleanup

The Department of Energy's Hanford Site, Environmental Protection Agency Region 10, and the Washington State Department of Ecology have successfully used an inter-agency partnering approach to initiate an on-time start for this Nation's largest dollar value Record of Decision (ROD). This ROD is for cleanup of radioactive wastes potentially impacting the Columbia River in Hanford's 100-BC area.

Political considerations regarding this cleanup had long been an issue on a local and regional level. However, it was the high cost of the ROD, once estimated at nearly $500 million, that necessitated the reexamination of major cost drivers of this cleanup and the startup of remediation activities by the agreed-upon date of July 1996.

To facilitate a streamlined decisionmaking process that allows for early, continuous, and substantive involvement of all key parties, and to help implement the Hanford Federal Facilities Agreement and Consent Order (Tri-Party Agreement), the Department of Energy, Environmental Protection Agency Region 10, and the Washington State Department of Ecology formed the Inter-Agency Management Integration Team. This team designated staff-level project managers from each agency with the responsibility for actual implementation of the Hanford 100-BC cleanup.

By designating core inter-agency team representatives, clarifying direction to the contractors, and investing and supporting the decisions made by this team, the three agencies gained substantially. The core inter-agency team, supported by Department of Energy contractors, was able to jointly readdress and rework major cost drivers; as a result, the cost of implementing this ROD is expected to be reduced by 77 percent.

Due to the success of inter-agency partnering, the Department of Energy is currently extending application of this process to the Hanford Tank Waste Remediation System Program.

For more information contact Nancy Werdel at 509-376-5500.

Re-engineering the Waste Management Program

Created in 1989, the Department of Energy's Waste Management program consolidated funding and management responsibilities held by multiple programs and sites. In the past 7 years, the program has tackled the complex and diverse problems associated with the treatment, storage, disposal, and cleanup of the Nation's nuclear and hazardous waste. Now the program is trying to revolutionize itself.

Under the leadership of the Office of Waste Management, the program is identifying the evolutionary changes to its management process. This effort, the Re-engineering Waste Management Project, is involving field and headquarters staff in identifying ways to increase waste generator accountability, decrease waste generation, and reduce life-cycle costs.

Four working groups have been created. The first will develop and monitor pilot projects complex-wide to evaluate alternative strategies for transitioning management and funding responsibilities from Waste Management to waste generation programs. Another group will develop a uniform data dictionary and unit cost definitions to provide a basis for comparing the effectiveness of strategies tested. The third group will identify financial and legislative issues associated with strategy implementation. The fourth group will identify changes to the program management functions necessary to support a re-engineered Waste Management.

Assistant Secretary Al Alm has briefed the assistant secretaries and their representatives to secure project support and outline the re-engineering effort timeline. With headquarters approval, the first pilot projects will begin on October 1, 1996, at 15 locations, with full implementation of the re-engineering effort expected for completion in the next 2 years.

For more information contact Jim Turi at 301-903-7105.

Perspectives

This page occasionally features a guest editorial as part of the newsletter's regular series of guest editorials, "Perspectives." This feature allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Dave Simon, Office of Environmental Management, EM-22, U.S. Department of Energy, Washington, DC 20585. Phone: 202-586-4253; fax: 202-586-0293.

Airplanes, *continued from page 1*

The Javelin airplane (shown in front) has an 8-foot wingspan and weighs about 15 pounds. A video camera is mounted to the nose of the plane. Pictured in the rear is the Porter airplane, with a 20-foot wingspan and total weight of 175 pounds.

One of the planes, the Javelin, carries a video camera, weighs 15 pounds, has an 8-foot wing span, travels at top speeds of 55 to 60 miles per hour, flies at an altitude of up to 10,000 feet, and can remain airborne for 1 to 2.5 hours. At the plant, the Javelin flew approximately 500 to 1,000 feet above the plant site at an average speed of 30 to 35 miles per hour. Staff on the ground were able to observe the plane's flight path and camera's field of vision via video monitor, even when the plane was out of the line of sight.

Since aerial photographs of the site had been taken as late as 1993, a complete flyover was not needed. Consequently, the planes photographed only the areas that had changed. The photographs were then scanned into a computer and integrated into existing aerial photographs. The resulting photographs accurately reflected current site conditions.

Because of the success of the project, the staff is considering using unmanned aircraft with geophysical sensory equipment to survey ground-water flow patterns and to measure ground electroconductivity. Unmanned aerial vehicles are already used in commercial work such as atmospheric sampling, bridge inspection, fish spotting, power line inspection, and drug enforcement surveillance.

For more information contact John Sheppard at 614-897-5510 or Sandy Childers at 614-897-2336.

Hanford's Effluent Treatment Facility Proves a Success

Since its startup, the 200 Area Effluent Treatment Facility at the Hanford Site has treated and disposed of more than 8 million gallons of process condensate, a regulated mixed low-level waste from the 242-A Evaporator. The facility, which had a hot startup in November 1995, has logged more than 287,000 operational man-hours without a lost or restricted workday.

Distilled wastes from the evaporator are transferred and stored at the Liquid Effluent Retention Facility. After enough condensate has accumulated, it is sent to the Effluent Treatment Facility where a series of processes extract and/or destroy essentially all of the hazardous and radioactive constituents, except for tritium. Scientists then analyze the treated liquid to ensure that it complies with environmental regulations before discharging it to a State-approved disposal site. The Environmental Protection Agency has delisted the treated liquid from Resource Conservation and Recovery Act requirements.

The facility will process an additional 1.1 million gallons of process condensate before the fiscal year ends. An extra 1.4 million gallons of wastewater from the 100 N Reactor Fuels Basin and Emergency Dump Basin will be processed in 1997. With the successful operation of the Effluent Treatment Facility, Hanford is providing tangible proof of the Department of Energy's commitment to minimize ground-water contamination and reduce the volume of liquid waste stored in the site's double-shell tanks.

For more information contact Lydia Chang at 301-903-7136.

Hanford Lab Is Subject of Study

To evaluate the effectiveness of its $100 million analytical laboratory services program and help plan for the future, the Department of Energy's Office of Hanford Operations recently commissioned an independent study. The study was based, in part, on interviews conducted with site personnel, programs using the services, and regulatory agencies overseeing the site.

The final report, *Analytical Services at Hanford* (July 1996), summarizes the study and its recommendations. In particular, the report suggests that the Department:

- capitalize on its expertise by focusing on the analysis of high-level and transuranic waste samples, and
- privatize low-level waste sample analysis to minimize costs.

For more information contact Jim Poppiti at 301-903-7250.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Headway at Hanford

Immobilization Proves a Solution to Chromate Contamination

Researchers at the Pacific Northwest National Laboratory are using immobilization to prevent chromate from flowing into the Columbia River near the Hanford Site's 100-H Area. By immobilizing part of the 100-H Area plume, the scientists have created a barrier that stops hazardous chromate but allows ground water to flow through. The chromate is immobilized by coming into contact with naturally occurring ferric iron in the soil, which has been chemically changed to ferrous iron by the addition of sodium dithionite.

Startup costs for the project are similar to costs for conventional pump-and-treat remediation. However, once placed, the permeable barrier requires minimal operation or maintenance. Laboratory and contractor scientists and engineers are planning to replicate this project's success with a larger-scale test of chromate immobilization at the site's 100-D Area.

For more information contact Susan Bauer at 509-375-2561.

Richland Operations Manager John Wagoner provided comments at the dedication ceremony for the Environmental Restoration Disposal Facility (ERDF). In the background is the ERDF pit and equipment used to load contaminated soils into the facility.

Disposal Facility at Site Opens Ahead of Schedule

More than 1.2 million cubic yards of waste will be disposed of in just two of the cells of the new Environmental Restoration Disposal Facility. The facility opened for business in July, 4 years ahead of schedule and $80 million under initial projections. Part of the shortened timeline is attributable to streamlining of regulatory requirements; project staff incorporated the National Environmental Policy Act process into Comprehensive Environmental Response, Compensation, and Liability Act requirements. In addition, under a Tri-Party Agreement, the Department of Energy, Environmental Protection Agency, and Washington State Department of Ecology teamed to expedite regulatory procedures.

To make way for waste, more than 2 million cubic yards of dirt were excavated to create the first two cells. The entire basin, which measures 1,000 feet long, 500 feet wide, and 70 feet deep, cost about $45 million to construct. The facility will provide low-cost disposal, about $61 per cubic yard, significantly lower than current disposal costs that are averaging between $200 and $1,500 per cubic yard at other disposal sites around the Nation.

The facility is comprised of multiple barriers constructed of welded high-density polyethylene sheets, geosynthetic layers, and gravels. The barriers are installed on impenetrable layers of bentonite clay and soils. Once the facility is filled with waste, an engineered barrier will be placed on top to prevent leaching.

For more information contact Colleen Clark at 509-373-5985.

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Explosives Remove Aging Site Structures

Hanford's skyline changed dramatically when two 175-foot-tall water towers were recently brought down by explosives. The demolition, which took place July 21, 1996, is part of the Department of Energy's campaign to clean up the site. Originally, the buildings were slated for removal next year; cost savings on other projects made this earlier work possible.

The two water towers had stored emergency cooling water for the site's C-Reactor, which operated from 1952 to 1969, producing plutonium for the Nation's defense program.

For more information contact Guy Schein at 509-376-0413.

With a thundering report, explosives were detonated to bring down two giant water towers at Hanford's C-Reactor. The towers were cut up and the scrap metal processed as salvage.

Rocky Flats Wrap-up

DOE Secretary Says Site Closure Has Begun

With the deactivation and decontamination of its Building 889, the closure of the Rocky Flats site has begun in earnest, announced Secretary of Energy Hazel O'Leary. "Building 889 will be the first nuclear facility at Rocky Flats to be demolished as we move toward the closure of this site," said O'Leary. "The closure of Rocky Flats is underway."

In late August, Building 889 was reduced to a heap of rubble and scrap metal, making it the first radioactively contaminated structure at Rocky Flats to be demolished. Uranium, asbestos, and other contaminants were removed prior to demolition, and contaminated debris has been packaged and will be disposed of as waste. Uncontaminated building debris will be disposed of in the site sanitary landfill, and the metal portion of the building will be shipped offsite for recycling.

For more information contact Jennifer Thompson at 303-966-6285.

Rocky Flats Reduces Risks at Building 771

Building 771 at the Rocky Flats Site, once rated the highest risk facility in the Department of Energy complex, is a lot less hazardous these days as the result of a major risk reduction effort. In June, workers finished draining the last 10 low-level plutonium tanks and removed resin from 8 ion-exchange columns in the building.

Approximately 1,650 liters of plutonium-bearing solutions have been drained from 14 low-level tanks at Building 771 over the last 2 years. The solutions were mixed with cement to create a solid, more stable waste form. In addition, contractors removed resin from ion-exchange columns, eliminating a fire hazard. Resin is a polymer material that was used in the past to recover plutonium.

Four tanks at the building, which contain higher concentrations of plutonium, have been drained. Five remaining high-level plutonium tanks will also be drained, and this activity will be completed by May 1998.

Building 771 had been rated the highest risk facility, due to its plutonium storage, in the 1994 Plutonium Vulnerability Report. The recently completed actions address storage vulnerabilities outlined in the report.

For more information contact Jennifer Thompson at 303-966-6285.

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Rocky Flats Site Receives Plaudits for Removal Actions in GAO Report

Sites that extensively use removal actions for remediation greatly reduce cleanup time and cost, finds a new General Accounting Office report. The report cites Rocky Flats as one of two Department of Energy sites that "vigorously pursued removal actions" for this purpose; the five sites studied in the report comprise about 94 percent of total cost of restoring the Departmental complex.

The report encourages the use of removal actions that take up to 90 percent less time and money than other approaches and recommends that other sites re-evaluate remediation strategies to maximize their use.

Rocky Flats used removal actions to clean up its former chemical dump site, Ryan's Pit, in 1995, saving $1.8 million and 4.5 years in the process. A current project—the remediation of Trenches 3 and 4—will save $2 million and be finished nearly 3 years ahead of schedule. The new Rocky Flats Cleanup Agreement emphasizes cleanup and decommissioning under an accelerated approach. A major element of the agreement involves work prioritization and utilization of removal and interim actions for the purposes of accelerating cleanup and reducing overall risk.

For more information, or to obtain a copy of the report, contact Lara Ramsey at 303-966-3463.

INEL Wrap-up

Mixed Low-Level Waste Treatment Achieved Ahead of Schedule

The Idaho National Engineering Laboratory has eliminated its backlog of legacy incinerable mixed low-level waste significantly ahead of schedule. This backlog, totalling in excess of 45,000 pounds of radioactively contaminated hazardous waste, was successfully incinerated at the laboratory's Waste Experimental Reduction Facility. The facility's ability to meet this accelerated schedule reflects improved productivity, efficiency, and scheduling flexibility by its personnel.

Mixed low-level waste, which contains both radioactive and hazardous constituents, is treated at the facility using an incineration process. Incineration of the waste began in September 1995, nine months ahead of the scheduled start date in the Federal Facility Compliance Act-required Site Treatment Plan. Approximately 10,600 pounds of mixed low-level waste has been retained at the facility for incineration during a Resource Conservation and Recovery Act permit-required trial burn in the spring of 1997. Holding this waste for the trial burn reduces costs by eliminating the need to create surrogate waste.

The facility has been able to achieve additional cost savings by incinerating backlogged low-level waste with the mixed waste. The low-level waste is being used as an auxiliary fuel to maintain appropriate operating temperatures, resulting in both a cost savings and a reduction of the low-level waste backlog.

For more information contact Stacey Francis at 208-526-0075.

Capping Project Begins for Reactor Burial Grounds

Two reactor burial grounds at the Idaho National Engineering Laboratory are being capped this summer to further isolate the contaminated materials from humans and the surrounding environment.

Construction of the caps began in July for the Stationary Low-Power Reactor-1 and Boiling Water Reactor Experiment-I burial grounds. Each site is the location of radioactively contaminated soil and debris resulting from the destruction of a nuclear reactor. The capping project is scheduled to be completed by the end of October at a fixed-price cost of $661,000.

At the Stationary Low-Power Reactor-1 burial ground, a "bio-barrier" will be used to cover the buried debris. This cover, or cap, consisting of layers of gravel and cobbles, will be constructed of mostly onsite materials. Finally, large boulders will be placed on top of the cap. The 120x120-foot area of the Boiling Water Reactor Experiment-I burial ground will be covered with large boulders. Both areas were previously covered with natural materials and surrounded by fences.

Other major components of the selected remedy include recontouring and grading the surrounding terrain to direct surface-water runoff away from the caps, conducting periodic radiological surveys of the areas, inspecting and maintaining the caps, restricting access, and restricting land use to industrial applications for at least 100 years following installation of the caps.

For more information contact Erik Simpson at 208-526-4700.

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UMTRA Updates

NRC Certifies UMTRA Site

The Nuclear Regulatory Commission recently certified that the Tuba City, Arizona, Uranium Mill Tailings Remedial Action (UMTRA) Project is complete. The former mill and tailings site is located near Tuba City and consists of about 105 acres; 22 of these acres were covered by a tailings pile, 44 acres comprised former evaporation ponds, and the remaining acres were contaminated by windblown tailings. Cleanup of the site was completed in 1990.

Ownership of the site will remain in Tribal hands, with the Department of Energy remaining responsible for long-term care and monitoring.

For more information contact Steve Hamp at 505-845-5640.

Work Is Nearing Completion at Slick Rock Site

Nearly all of the contaminated materials have been removed from both sites at Slick Rock, Colorado. More than 107,000 cubic yards of uranium mill tailings and other contaminated materials have been hauled from the North Continent site, while 490,000 cubic yards had been removed from the Union Carbide site as of mid-September. In addition, 21,000 cubic yards of windblown contamination had been removed from around the Union Carbide site.

Material movement began in April and will be completed in late September. The Department of Energy estimates that around 771,000 cubic yards of material will be placed in the disposal cell, compacted, and topped with a multi-layer cover. The cover will be completed in December.

For more information contact Steve Hamp at 505-845-5640.

Hansen Container Site Cleaned Up

Cooperative work between the Environmental Protection Agency (EPA), the Department of Energy (DOE), and the Colorado Department of Public Health and Environment resulted in the successful cleanup of the Hansen Container site. The three agencies pooled resources and saved $3 million in the process.

From the mid 1950s to 1991, Hansen Container cleaned, repainted, and recycled drums containing paints, pesticides, solvents, and other hazardous materials. The drums were then resold.

In 1989, DOE employees discovered high levels of lead and organic contamination during a routine assessment. The site was subsequently classified as a Superfund site.

EPA removed 27,000 drums, and DOE hauled away debris from the 20,000-square-foot warehouse the Agency demolished. In addition, EPA stabilized and immobilized 12,000 tons of contaminated soil. DOE then disposed of the treated soil as mill tailings at the Cheney disposal cell near Whitewater, Colorado. By transporting and storing the waste at Cheney, rather than disposing of it in a hazardous waste landfill, the agencies saved taxpayers $3 million.

"If it weren't for the UMTRA program, they [EPA] would have had to haul the soil 250 miles to a facility in Utah," said Joe Virgona, UMTRA project manager. And the fact that EPA treated the waste saved DOE that step, he noted. "The fact that we worked together made the total cleanup possible," said Virgona. "We offset each other's costs just by the fact we were all involved."

While all of the known hazardous waste has been removed from the property, some radiological contamination remains on its southern site. DOE plans to remove and complete disposal of the remaining contaminated soil in 1997.

For more information contact Audrey Berry at 970-248-7727.

UMTRA Project Nears Completion

Summer closing ceremonies in Gunnison and Rifle, Colorado, marked the successful completion of three more UMTRA sites, two of them at Rifle. Eighteen of the 24 sites in the project are now complete.

Contaminated material from all three sites was disposed of in two offsite disposal cells; 1 million cubic yards were removed from Gunnison, and 4 million cubic yards were removed from the Old and New Rifle sites. The final step is Nuclear Regulatory Commission certification, after which the former processing sites will be turned over to the local communities for public use.

For more information contact Steve Hamp at 505-845-5640.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

WIPP Wrap-up

Western Governors Pass Resolution to Open WIPP

In June 1996, the Western Governors Association passed a resolution that encourages the Department of Energy to open the Waste Isolation Pilot Plant (WIPP) as soon as possible to reduce public and environmental risks. The resolution stresses the importance of WIPP to permanently dispose of transuranic radioactive waste and reflects the western governors' continuing interest and involvement in supporting the opening of WIPP on schedule.

For more information contact Patty Barratti-Sallani at 505-234-7313.

Department and Western Governors Sign Memorandum of Agreement

In March 1996, Secretary of Energy Hazel O'Leary and Nebraska Governor E. Benjamin Nelson, Chairman of the Western Governors Association, signed a memorandum of agreement on how transuranic waste will be shipped to WIPP. The agreement describes how the Department will use the regional protocols to safely transport transuranic waste to WIPP, scheduled to begin receiving waste in April 1998. Managing the safe transportation of waste to WIPP is the joint responsibility of Federal, State, local, and Tribal governments.

For more information contact Patty Barratti-Sallani at 505-234-7313.

President Signs Bill To Speed WIPP Opening

On September 23, 1996, President Bill Clinton signed legislation to clear the way for the Department of Energy to begin shipping defense-generated transuranic waste to WIPP as early as November 1997.

Clinton signed the Fiscal Year 1997 Defense Authorization Bill, which contains amendments to the 1992 WIPP Land Withdrawal Act. These amendments remove redundant regulations, eliminate a 180-day waiting period, and save taxpayers millions of dollars. The opening of WIPP for disposal operations is dependent upon the U.S. Environ-

Bill, *continued on page 9*

Innovative Use of Video Equipment Enhances WIPP Mine Maintenance

Mine operations personnel at WIPP are using a video system adapted to a mining machine for safer, more efficient scaling of walls (ribs) in the project's underground facility. Scaling of the mine walls is a routine part of ground control efforts in the WIPP underground, ensuring a continued safe environment. Mining technicians felt that scaling operations could be accomplished more efficiently and effectively if the operator could actually see the chisel tip from his position on the mining machine. As a result, a video system was adapted to the scaler, adding greater visibility and safety for the operator.

Carlsbad Area Office Manager George Dials sees the innovation as just one more example of why WIPP has retained its impressive safety record: "Safety and efficiency are keys to the success of the WIPP program, and WIPP employees continuously respond to the challenges by devising better ways of doing business."

For more information contact Dan Balduini at 505-234-8658.

An underground scaling machine removes loose rock from walls and ceilings in the WIPP underground, assuring safe working conditions. A camera head is affixed to the boom, and the operator is able to view the action on a monitor screen.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Bill, *continued from page 8*

mental Protection Agency's (EPA) certification of the project's compliance with environmental regulations.

"The President's approval of this bill is a very important event for the Department of Energy and our Nation," said George Dials, manager of the Carlsbad Area Office. "It reaffirms the EPA's role as the independent regulator and further enhances the prospects for protecting the health and safety of the public by removing unnecessary administrative impediments to the opening of this critically important facility."

The WIPP facility is designed to permanently dispose of transuranic radioactive waste left from the research and production of nuclear weapons. Transuranic waste consists of clothing, tools, rags, and other disposable items contaminated with trace amounts of radioactive elements, mostly plutonium.

For more information contact Patty Barratti-Sallani at 505-234-7313.

Carlsbad Completes Over 1,000 Technology Transfer Projects

The Department's Carlsbad Area Office recently passed the 1,000 mark in completing technology transfer projects with various businesses and organizations. Over 1,000 companies, univer-

Carlsbad, *continued on page 14*

Over 360 Tribes Represented at National Tribal Symposium

Representatives of more than 360 Tribes from 12 States and the District of Columbia participated in the Department of Energy's Carlsbad Area Office National Tribal Symposium, held in Carlsbad, New Mexico, in June.

The Department hosted this symposium to receive input from Tribal leaders whose lands may be along transportation routes designated for shipments of defense-generated transuranic radioactive waste that will be permanently disposed of at the Waste Isolation Pilot Plant (WIPP).

The symposium fulfilled a congressional and presidential mandate that requires the Department to seek Tribal involvement in planning for shipments of waste to WIPP.

Attendees of the Department's National Tribal Symposium listen to a project spokesperson while touring underground waste disposal rooms at WIPP. Tribal representatives toured the facility as part of the symposium held on June 17-20, 1996.

About 60 representatives of Tribal governments and organizations from Arizona, California, Idaho, Oklahoma, Oregon, Missouri, Nevada, New Mexico, New York, North Carolina, North Dakota, Utah, and the District of Columbia attended. Tribal leaders visited WIPP to see, first hand, how the Department plans to permanently dispose of transuranic waste. The topics covered included radiological response, technology transfer,

Symposium, *continued on page 14*

Using Tomorrow's Technologies to Clean Up Today's Wastes

Four new technologies are helping the Oak Ridge Reservation meet cleanup goals with superior results. A confined sluicing system, an ion-exchange system, a mobile evaporator, and a transportable vitrification system are being used to achieve faster, cheaper, and cleaner remediation.

At the Oak Ridge National Laboratory, a new confined sluicing system will be used to complete the cleanup of Gunite underground storage tanks. While most of the waste in these tanks was removed from 1982-1984, substantial amounts of hazardous and radioactive waste remain, including dense sludge that has hardened on the tank walls. The new technology, which consists of a vacuum head, a high-pressure water jet, and piping, can be operated remotely via a compact expandable vehicle or robotic arm, thus protecting workers. The waste will then be piped to the Melton Valley storage tanks.

Removing cesium from tank wastes simplifies treatment and reduces costs; an ion-exchange system at the Laboratory's Melton Valley storage tanks is being used to do just that. The new modular, mobile system pumps liquid waste out of the tank, filters out solids, and processes the filtered liquid with state-of-the-art ion-exchange material to remove cesium. The processed liquid is then returned to the tank, while the cesium-loaded ion-exchange material is vitrified.

By evaporating water from low-level liquid waste, the Laboratory saves storage space and reduces the amount of waste requiring disposal. With costs for grouting these wastes reaching about $60 per gallon, the savings can be significant for sites storing thousands of gallons of low-level liquid waste. At the Laboratory, a mobile out-of-tank evaporator system removed 5,000 gallons—or nearly 25 percent—of water from 22,000 gallons of low-level liquid waste stored in the Melton Valley tanks. The system consists of five modules and is fully remote-controlled.

Another mobile system is being used at the K-25 site to manage mixed wastes. The transportable vitrification system treats mixed waste and reduces its volume by melting it into a glass product. Unlike other vitrification systems, the transportable vitrification system can be used to treat soils, sludges, and a wide range of other waste streams that have already been removed from the ground. The resulting vitrified product can be safely stored until it can be disposed of at an approved facility.

The system includes separate modules for materials preparation, melting, emission control, and power control. At maximum capacity, the system can produce about 300 pounds of glass per hour.

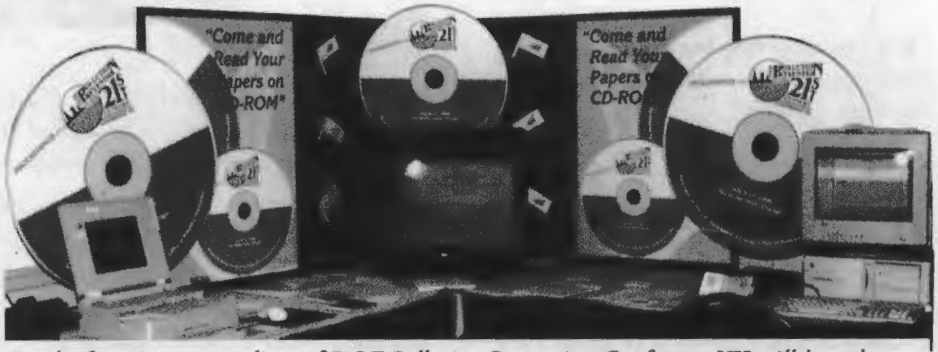
For more information call Jacquie Noble-Dial at 301-903-7234.

Pollution Prevention Conference Attracts a Crowd

Nobel Laureate Leon Lederman stresses the need for scientific literacy for all if Americans expect their society to maintain and grow in its technology-based world leadership.

More than 400 participants representing Federal and State agencies, government contractors, and private industry attended the annual Department of Energy Pollution Prevention Conference. The conference, which was held in Chicago, Illinois, from July 8-12, 1996, featured more than 100 presentations including poster sessions, panels, and paper presentations. The conference was hosted by the Department's Chicago Operation Office and Argonne National Laboratory, in association with EM-70's Office of Pollution Prevention.

Conference proceedings will be available on CD-ROM in October. For more information contact Ray Lang at 630-252-2230.



For the first time, proceedings of DOE Pollution Prevention Conference XII will be published on CD-ROM. Based on last year's totals, using CD-ROM will avoid wasting over approximately 150,000 sheets of paper!

FUSRAP Cleanup Reaches Halfway Mark

The Department of Energy has finished cleanup of the B&T Metals Site in Columbus, Ohio, marking its 23rd Formerly Utilized Sites Remedial Action Program (FUSRAP) site completion. FUSRAP has 46 sites in 14 States.

The B&T Metals was used in 1943 to extrude uranium fuel rods for nuclear reactors built in Hanford, Washington. Uranium contamination remained in the facility's ceilings, walls, and flooring. Cleanup of the site began in March 1996 and was completed in early June — on time and within budget, according to project officials. The contaminated material was removed and shipped to an offsite disposal facility at a cost of approximately $2.5 million.

In addition to the 23 completed sites, FUSRAP has initiated work at 12 others. Other Ohio site completions include the Baker Brothers Site in Toledo, the Associate Aircraft Site in Fairfield, the HHM Safe Company Site in Hamilton, and the Alba Craft Site in Oxford. Other recent FUSRAP completions include the Chapman Valve Site in Indian Orchard, Massachusetts; the GM Site in Adrian, Michigan; and the decontamination and dismantlement of the Colonie Site building in Colonie, New York.

For more information contact Al Johnson at 301-903-7226.

FUSRAP Team. Front row: Steve Oldham, Steve Williams, Deputy Project Director Bill Seay, Project Director Les Price, John Japp, Jason Darby, Loren Marz. Second row: Dave Adler, Melyssa Noe, Jim Kopotic, Karen Houser, Margaret Dyke, Tina Patterson, Bob Atkins, Missy Seiber, Ron Kirk, Susan Cange, Jim Hart, Estraletta Green, Gary Hartman. Not pictured: Albert Johnson, Alexander Williams, Sal Golub, Paul Blom, John Patterson, and Dana Norris.

Pinellas Treats Ground Water with Innovative Technologies

Working with regulatory agencies, industry, and laboratories, the Pinellas Plant will pilot-test three technologies on a small portion of its site. Scientists selected the Northeast Site, a 3- to 4-acre area with contaminated ground water, as the location for the testing. Volatile organic compounds, including trichloroethylene and methylene chloride, have contaminated the site's surface water in parts ranging from 50 to 100 parts per million; one area has concentrations exceeding 1,000 parts per million.

A membrane separation system will be used to treat pumped ground water, while a portable rotary drilling system will inject hot air into highly concentrated areas, stripping contaminants from the soil. And finally, nutrient injection will be used to stimulate in situ anaerobic biodegradation of areas with low concentrations. Two of the technologies, rotary steam stripping and in situ anaerobic bioremediation, have been selected for full-scale operation. Use of these technologies should reduce contamination levels to drinking water standards within the next 3 to 5 years; by implementing these two technologies, project staff expect to save about $4 million to $10 million over the baseline.

For more information contact Dave Ingle at 813-541-8943.

Princeton Laboratory Saves Money with Vial Crusher

By crushing and separating liquid scintillation vials, the Princeton Plasma Physics Laboratory is saving more than $8,000 a year. The vials, which are slightly radioactive, were used to analyze tritium at the site's Tokamak Fusion Test Reactor. Previously, the Laboratory used an offsite facility to incinerate the vials.

For more information contact Jeff Makiel at 609-243-3721.

EM Process Benchmarking Team's Innovative Approach Takes Off

A new benchmarking program within Environmental Management is bringing headquarters and the field together in the drive to implement process improvement throughout the Department. The unique approach is also building trust and removing barriers across all levels of the Department.

This program is designed to be field-centered and headquarters-guided. According to Joel Kristal, the Environmental Management benchmarking team leader, "the best way to affect change is to allow the individuals who are involved in the process to have a say in how the process should be improved." This is not a paper study that once completed becomes shelfware; the results of the benchmarking studies have led to process improvements. The key is acceptance and performance of the process benchmarking effort by the individuals involved (i.e., the process owners).

Process benchmarking is different from cost comparison studies, which are often referred to as outcome/competitive benchmarking. Cost comparison studies identify cost differences but do not, of themselves, address why the differences exist or affect change. Process benchmarking looks at the processes in detail with the process owner and addresses why there is a difference so that change can be affected. The process owner must acknowledge the need to change, be willing to change, and have the authority to make the change happen if process benchmarking is to be successful.

According to Kristal, "the key is successful development of partnerships — between the field offices, with headquarters, between other Federal agencies, and with private industry."

The Environmental Management benchmarking team will provide an introductory session to orient interested individuals with a working-level knowledge of process benchmarking. At the request of the organization, the team will provide the following as requested:

- team orientation;
- identification of processes for process benchmarking;
- facilitation of meetings for process benchmarking efforts;
- development and analysis of the necessary surveys;
- assistance with the development of partners both internal to the Department and external, other Federal agencies, or private industry; and
- assistance with the development and writing of the resulting report.

If the organization has found value added, they are asked to provide one individual to help start up another study at a separate site and/or provide additional funding back to headquarters to offset some of the team's costs. The concern is bridging the "funding gap" for initial studies and follow-on studies. Funding assistance from the organization is sought for mentorship, which is provided beyond the initial benchmarking effort. Process improvements usually result in dollar savings, and a small part of the identified savings would then be plowed back into the EM process benchmarking team. The majority of the savings (cost avoidance) would be used by the site to address other mortgage reduction problems.

It is also up to the particular organization to implement and track their own savings. The idea is that if people are motivated enough to identify how they can improve their own process, they will make sure it is incorporated.

Two pilot efforts were completed in Richland earlier this year, and lessons learned were incorporated into a guide. Since that time, the team has made approximately 20 introductory presentations and been invited to provide the hands-on orientation to approximately 500 individuals.

Approximately 15 studies have either started or are being considered at 4 field offices. In addition, there are two additional field offices that have indicated interest in exploring process benchmarking. Completed studies will be posted on the Environmental Management benchmarking home page.

Success is also being demonstrated outside the Department with other Federal agencies, as well as in the private sector. There are at least three corporations that have expressed interest in becoming permanent partners with Environmental Management efforts and others who have participated in specific studies.

The mission of the Environmental Management benchmarking team is to encourage the use of benchmarking as a tool to improve performance while improving communication among our field sites, headquarters, private industry, and local governments.

For more information, or to obtain a copy of the Environmental Management process benchmarking guide, please call the Environmental Management benchmarking team at 301-601-1804 or contact Joel Kristal at 301-903-7143.

Oak Ridge Increases Offsite Shipment of its Wastes

The Oak Ridge Reservation is doubling the amount of wastes it ships offsite for treatment and disposal this year; almost 30.4 million pounds will be shipped offsite in 1996, as opposed to about 13.8 million pounds shipped in 1995. In 1997, this figure will increase to more than 39 million pounds. Most of this waste is mixed or low-level waste; only a small fraction is hazardous.

Offsite shipment is helping the Department of Energy prepare the Reservation for defederalization and reindustrialization. The Department plans to make facilities, equipment, and materials at the Reservation's K-25 Site available to private industry for sale or lease.

Approximately 110 million pounds of low-level mixed waste are in storage at the Reservation. This waste includes soils, inorganic and organic solids, organic liquids, and various types of debris. Much of the mixed waste is being shipped to Envirocare in Clive, Utah, for treatment and/or disposal; other private sector treatment is anticipated in 1997. Some low-level waste is sent to the Scientific Ecology Group facilities in Tennessee for treatment and volume reduction. Low-level waste disposal at Envirocare and/or the Nevada Test Site is planned for 1997.

For more information contact Suzy Riddle at 423-576-9212.

Headquarters Environmental Management Privatization Team Established

Assistant Secretary Alm has established a Headquarters Privatization Team to ensure that privatization of Environmental Management programs, projects, and support functions is established where it is most cost effective. Cost-effective privatization is essential to achieving Environmental Management's 10-year plan and major improvements in efficiency.

The Headquarters Privatization Team is headed by Ken Glozer with team members from each major Environmental Management program. Team members include Barry Gaffney, Office of Planning, Policy, and Budget; Kim Chaney, Waste Management; Kelly Kelkenberg and Ross Bradley, Environmental Restoration; Tip Brolin and Andy Griffith, Nuclear Material and Facility Stabilization; and Jeff McMillan and Fred Butterfield, Site Operations.

The privatization team will support the overall Environmental Management 10-year planning effort, and its responsibilities will be to:

- promote cost-effective privatization throughout Environmental Management;
- review and evaluate field office privatization proposals that are provided for the 10-year plan and the Fiscal Year 1998 budget;
- provide technical assistance, lessons learned, and training to headquarters and field groups;
- monitor field office privatization programs and report to the Assistant Secretary on progress;
- establish and maintain privatization definitions; and
- develop and maintain the methodology for evaluating cost, technical, and management effectiveness.

☆☆☆AWARD☆☆☆

The National Performance Review recently selected the Environmental Management Critical Few Performance Measures team to receive the Vice Presidential "Hammer" Award by the National Performance Review. On September 13, 1996, an award ceremony was held at Assistant Secretary Alm's office, and team members received individual certificates and lapel pins. A framed hammer and card signed by Vice President Gore was presented to the Assistant Secretary by National Performance Review senior staff member John Kamensky.

The Critical Few Performance Measures team members include Jessica Arcidiacono, EM-15; Don Beck, EM-22; Brendan Burns, EM-65; Fred Butterfield, EM-74; Henry DeGraca, DOE/Oakland; Frank DiSanza, DOE/Nevada; Steve Einan, EM-54; John Evett, DOE/Albuquerque; Ned Larson, EM-15; Rob Muller, BAH (formerly of EM-10); Ed Muszkiewicz, EM-33; Gail Pesyna, EM-10; and Karl Stoeckle, EM-33.

Carlsbad, *continued from page 9*

sities, government agencies, and nonprofit organizations have used the Internet system on their computers to access, at no cost, taxpayer-funded technology developed through the Carlsbad Area Office. The office administers the Waste Isolation Pilot Plant and the National Transuranic Program.

The Carlsbad Area Office Technology Transfer Program is designed to promote economic development and competitiveness in the private sector, improve the quality of organizational operations, enhance education and training, and ensure maximum return on taxpayer investment. The technology, which consists mainly of training materials, technical manuals, and managerial tools developed at the Carlsbad Area Office, is available to organizations for nonexclusive commercialization or internal use at no cost.

Since revamping the technology transfer system in January 1995, the office's success in completing technology transfer projects demonstrates the positive impact the Internet is having by targeting potential customers and providing them with the information they need. Among the major organizations in the United States taking advantage of the program are: Proctor and Gamble (Cincinnati, OH); the U.S. Military Academy (West Point, NY); the University of Notre Dame (West Bend, IN); Duke University (Durham, NC); and the Smithsonian Astrophysical Observatory (Cambridge, MA).

For further information contact Bill Keeley at 505-234-7594.

Symposium, *continued from page 9*

emergency response training, the WIPP transportation system and how it works, WIPP raptor research and land management, Department/Tribal cooperative agreements, and Tribal authority and jurisdiction on interstate highways.

The symposium also gave the Tribes a mechanism to participate in the development of WIPP's second Supplemental Environmental Impact Statement. Public hearings on the draft environmental impact statement are scheduled for late summer and early fall.

For more information contact Patty Barratti-Sallani at 505-234-7313.

Tribal leaders inspect a transuranic package transporter that will be used to ship defense-generated transuranic radioactive waste from storage sites to WIPP for permanent disposal.

Fernald Receives Approval to Continue Waste Shipments

The Fernald Environmental Management Project has received approval to continue the shipment of low-level radioactive waste offsite for disposal. The waste includes thorium residues and thorium-contaminated items, including 5,600 deteriorated drums, process area scrap, construction/demolition debris, and process residues. The deteriorated drums are overpacked in new disposal containers to protect the public and the environment during shipment.

Two additional waste streams were also approved for offsite shipment—solidified mixed waste, which is treated before shipment to eliminate safety hazards—and solidified thorium nitrate.

For more information contact Gary Stegner at 513-648-3153.

This remote-controlled forklift vehicle is being used to handle deteriorated drums of radioactive thorium waste at the Fernald Environmental Management Project.

EM Slogan Down to Two Final Contestants

While voting on the Environmental Management slogan has winnowed a field of contestants to two final choices, reader response has been less than overwhelming. Is the low voter turnout a reflection of reader ambivalence about the choices, a lack of interest in the concept, or sheer indifference, I wonder?

What is interesting is that the apathetic response to the slogan contest has coincided with a dramatic upswing in the number and quality of stories submitted to *EM Progress*. The latter is surely an indication that people throughout Environmental Management are interested in reading about successful cleanup and seeing their stories in print. I also believe that our readers see their involvement in the program as important and significant. While a slogan won't change budget strife or eradicate bureaucratic inertia, it does give us a framework for the work we do on a daily basis.

With this in mind, I declare the voting still open. Your final two choices are:

- Reclaiming the past to secure the future
- EMbracing environmental excellence

E-mail your vote to Dave Simon at <David.Simon@em.doe.gov>.

Credits

EM Progress is published quarterly. To learn more about the newsletter, or how to submit an article, please contact either Dave Simon or Joe Zabel at the phone numbers listed below.

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New Manager Named at Rocky Flats

Jessie Roberson

Jessie Roberson has taken over as manager of the Rocky Flats Field Office effective June 2, 1996; she replaces outgoing manager Mark Silverman. Previously, Roberson served as the site's assistant manager for environmental safety and health and performance assessment. She brings more than 15 years of nuclear engineering, waste management, and environmental restoration experience garnered at government and corporate organizations to her new position.

Roberson, who won the 1996 Black Engineer of the Year award for the entire Department of Energy complex, has received high praise from Secretary of Energy Hazel O'Leary and Under Secretary Thomas Grumbly. Said O'Leary, "Rocky Flats needs a leadership team that is visionary, inspiring, and tough, in order to continue the great work that Mark began. Jessie and Keith [Klein, deputy manager] have already shown that they can deliver real cleanup at lower costs." Grumbly concurred: "Jessie is absolutely the best person to continue improving relationships among our employees, regulators, elected officials, our surrounding community, and other stakeholders."

For more information contact Jeremy Karpatkin at 303-966-5993.

EM PROGRESS

Comments

We are interested in receiving your comments—what you like and what you don't like—about *EM Progress*. Your views, comments, and suggestions are appreciated.

_____

_____

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☐ Add me to your mailing list for *EM Progress*
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Look for the Winter 1996 issue of *EM Progress* to be distributed in late December!

DOE/EM-0286

EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 5 • Number 3 Summer 1996

Alm Moves In to Head EM Program, Grumbly Moves Up

Change is afoot on all fronts, even at the top levels of Environmental Management (EM) leadership. With Tom Grumbly's promotion to Under Secretary of the Department, Al Alm, formerly a sector vice president of Science Applications International Corporation, has been tapped to take over as Assistant Secretary. In his memo of May 10, 1996, Alm introduced himself to Environmental Management staffers and outlined his vision for the program:

After a protracted period, I have finally been confirmed to be the Assistant Secretary for Environmental Management. As when I initially accepted this challenge, I approach this job with enthusiasm, trepidation, and a great deal of humility.

In this, my first communication with most EM employees, I wish to tell you why I accepted this challenge, what I want to accomplish, and how I plan to operate in this position.

When Secretary O'Leary first asked me to take on this responsibility, I dutifully developed a list of all the pros and cons. There were many cons, such as long hours, loss of income, and criticism from all quarters; you all know the sacrifices that public servants must make. There were two strong pros. First, I would be working with a management team that I deeply respect. Second, I would have the ability to make a difference in protecting public health and creating a more cost-efficient program. The pros won out in my decision. I firmly believe there is nothing more satisfying or more important than conducting the public's business in the most effective way possible. I feel honored to be entrusted with this responsibility and plan to give it all I have.

Assistant Secretary Al Alm

I also applaud all of you who have chosen to serve the public, even when you receive little applause for your efforts. I began my career as a civil servant and continue to be impressed with the quality and dedication of most government employees. I am convinced we can work together to make a real difference.

I believe this program is at a critical juncture. With Tom Grumbly's leadership and your efforts, the EM program is making real progress. The pieces are in place to achieve success, such as incentive-based contracts, site-specific advisory boards, privatization, and many other initiatives. The next step is to take these initiatives and show continued progress in execution.

My primary goal in managing this program is to reduce most of the risks and most of the mortgages over a ten-year period. To achieve this objective, we need to first reduce the large costs that are being devoted to sustaining the current system—which is eating up too much of our funds. We need to stabilize wastes and decontaminate and decommission facilities to reduce mortgage costs. We need to reduce serious and imminent risks by moving quickly, often with interim response actions. We need to reduce all unnecessary overhead costs that soak up funds that could be used to reduce mortgages and risks. We need to apply new technologies when they can be used to cut costs and speed up action. Most important, we need to move this program toward completion. Delay only results in greater overall costs and more risk.

Leadership, *continued on page 13*

In This Issue...

Accelerated Remediation Results Detailed in New Report.....2

Department "Takes Stock" of Inventory Management 2

West Valley Prepares to Open Its Doors 5

International Sale Breaks Ground in Recycling Efforts.....6

EM Motto Still Up for Grabs.....9

Printed with soy ink on recycled paper

Faster, Cheaper Cleanup Hits the Nation

The Office of Environmental Restoration has released *Expediting the Cleanup*, a report on the accelerated cleanup of several Department of Energy sites. The document details the results of activities accomplished with an extra $60 million appropriated by Congress, especially for accelerated remediation. These funds were distributed between six field and operations offices and used for 40 activities at 14 sites in nine States. This extra appropriation is making it possible to complete 39 of the 40 actions in four years, as opposed to 12, and will ultimately save $48.5 million in lifecycle costs. Some of the activities include:

- Cleaning up contaminated soils at the Mound Plant in Ohio, thereby reducing the threat of worker exposure, preventing the spread of contaminants, and saving $12 million
- Remediating two former waste disposal areas at the Rocky Flats Plant in Colorado, thereby shaving 33 months off the completion schedule and saving about $2.0 million
- Cleaning up 12 waste sites at the Sandia National Laboratory in New Mexico, thereby reducing the total cost by $1.3 million and accelerating completion by up to six years
- Using innovative technologies to remediate ground water at the Pinellas Plant in Florida, thereby reducing preparation for facility reuse by 10 years and saving $3.0 million
- Cleaning up areas of the plating building at the Kansas City Plant in Missouri, thereby reducing project costs by $1.6 million and completion time by three years
- Accelerating the decommissioning of the privately owned King Avenue site at the Battelle Columbus Laboratories in Ohio, thereby saving $4.8 million and returning the site to its owner for reuse without radiological restrictions.

The report is available from the Office of Environmental Restoration. For more information contact Marcus Jones at 301-903-3124.

Department Takes Steps to Improve Materials Inventory Management

As part of its continuing effort to streamline operations and align resources with new missions, the Department of Energy is working to improve management and disposition and reduce costs for 820,000 metric tons of materials that no longer have clearly defined or immediate uses. Its actions are the result of the Materials in Inventory Initiative, commissioned by Deputy Secretary Charles Curtis, and completed over the last year by Environmental Management's Office of Strategic Planning and Analysis. The initiative was a Department-wide effort that involved almost every program, operations office, and field office.

The recently issued report, *Taking Stock: A Look at Opportunities and Challenges Posed by Inventories from the Cold War Era*, details the findings of the initiative and assesses the management practices, costs, and disposition challenges associated with these materials. *Taking Stock* identifies quantities and locations of ten categories of nuclear and non-nuclear materials: spent nuclear fuel, plutonium, natural and enriched uranium, depleted uranium, lithium, sodium, lead, chemicals, weapons components, and scrap metals and equipment. The initiative targeted these materials because they exist in significant quantities, have posed management issues in the past, or are not currently managed under Department-wide programs.

"Without action, the excess inventory will constitute an increasing custodial liability," Secretary of Energy Hazel O'Leary said, announcing the release of the report. "Working with our contractors and partnering with the private sector where appropriate, I am confident we can maximize the opportunities afforded by better materials management practices while minimizing the cost to our workforce and the taxpayer."

The materials have accumulated at 44 sites in 19 States since the end of the Cold War and the shutdown of nuclear weapons production and research facilities. Three materials constitute an estimated 97 percent of the total mass in storage: depleted uranium (72 percent), scrap metal (20 percent), and lithium (five percent). Significant quantities of many materials exceed anticipated needs of current missions. Some materials represent assets and may be resold or reused for future missions. Others pose environmental, health, or safety risks; maintaining them safely costs millions of dollars per year.

Inventory, *continued on page 10*

Perspectives

This page occasionally features a guest editorial as part of the newsletter's regular series of guest editorials, "Perspectives." This feature allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Dave Simon, Office of Environmental Management, EM-22, U.S. Department of Energy, Washington, DC 20585. Phone: 202-586-4253; fax: 202-586-0293.

Excavation at Double Tracks to Mark Nevada's First Soils Cleanup

Restoration of Nevada's first contaminated soils cleanup project, the Double Tracks test site, will begin in July. The site, which is located in the northwest corner of the Nellis Air Force Range, was the location of one of four experiments that comprised Operation Roller Coaster. For this project, the Atomic Energy Commission detonated the high explosive portion of several nuclear weapons to test their safety under accident conditions. On May 15, 1963, at the Double Tracks site, a mock device comprised of plutonium and depleted uranium was demolished on a steel plate using chemical explosives. Since the purpose of this specific test was to evaluate the spread of plutonium, the device was rendered incapable of producing a nuclear blast. Between 2.1 and 3.5 pounds of plutonium were spread across the desert floor. Scientists sampled and surveyed soil to determine the extent of its contamination and the distribution of the plutonium.

To restore the site, workers will excavate contaminated surface soil covering about 2.5 acres. The cleanup level for plutonium will be between 100 and 400 picocuries per gram. Double Tracks was selected as a starting point for the State because it is the smallest of Nevada's plutonium-contaminated sites; at 14 miles west of the town of Goldfield, it is also the closest to a populated area. Large-scale soils cleanup will start elsewhere in the State in 1997, if the Double Tracks cleanup proves successful.

Radiological surveys were used to find areas with the highest plutonium levels and pinpoint areas for excavation to take place. Remote sensing will also be used at other sites in Nevada and has set a worldwide standard for characterization of contaminated soil.

The Department of Energy is studying different ways to handle the excavation. Limiting the amount of dust generated is paramount, so the Department plans to use water and wetting agents to suppress hazardous plutonium-contaminated dust. Approximately 1,620 cubic yards of contaminated soil will be removed and transported to the Nevada Test Site for disposal. Remaining soil will be stabilized to prevent dust that might contain low concentrations of remaining radionuclides from blowing away; in addition, the soil will be revegetated.

For more information contact
Monica Sanchez at 702-295-0160
or Ethan Merrill at 301-903-8185. ➨

Lawrence Livermore Meets Milestone

With the startup of Treatment Facility G-1, the Lawrence Livermore National Laboratory has met its latest regulatory milestone on time and under budget. The facility is the first in a series of portable treatment units that are being constructed as a cost-conscious alternative to fixed treatment facilities and pipelines; constructing mobile units could save approximately $9 million.

Treatment Facility G-1 will be used to conduct hydraulic tests and remove contaminant masses across the site. System components include a particulate filter, a low-profile stacked-tray air stripper, and, to lessen air emissions, a vapor-phase granular activated carbon canister. If hexavalent chromium is present, an ion exchange unit can be added.

Treatment Facility G-1 is the first portable treatment unit to be built at Lawrence Livermore National Laboratory.

The unit can accommodate a water flow rate of one to 45 gallons per minute; the rate varies with the concentration of volatile organic compounds in ground water to meet air emission regulations and applicable relevant and appropriate requirements of the National Pollutant Discharge Elimination System. Portable units are run using utility power or diesel generators.

For more information contact
Ed Folsom at 510-422-0389. ➨

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Cleanup of Weldon Raffinate Pit Starts

Originally slated for startup in 1998, cleanup of Weldon Spring Site Remedial Action Project's four raffinate pits has begun early, commencing with work on Pit 4. After reviewing a revised work plan and cost-benefit analysis in December 1995, the Department of Energy authorized accelerated remediation of Pit 4. Plans to begin work at the other pits are also in the works.

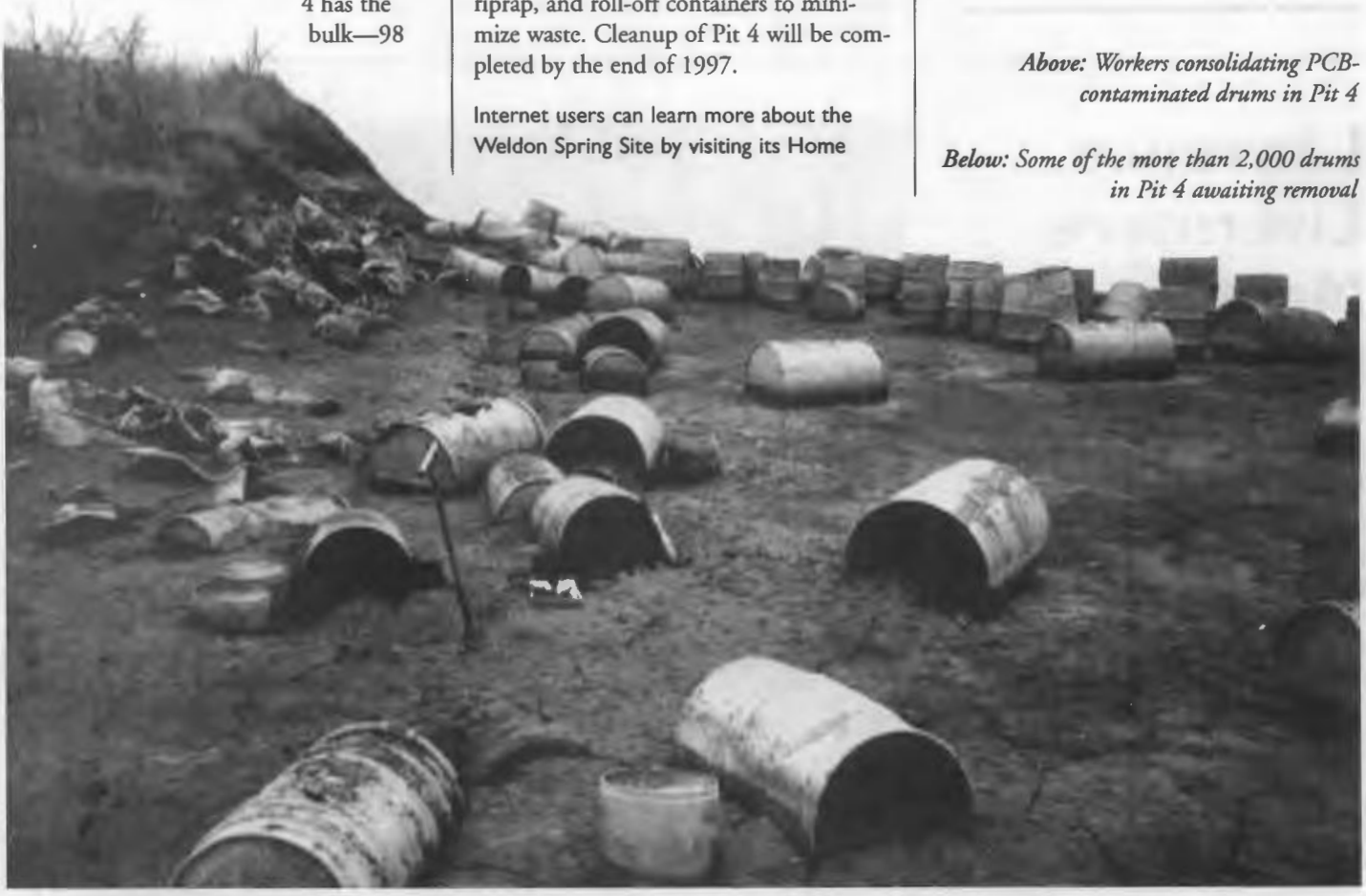
The pits are filled with 150,000 cubic yards of contaminated sludge, building debris and equipment, and more than 2,000 drums. The four pits occupy approximately 26 acres; Pit 4 has the bulk—98 percent—of the building debris and drums. Accelerating the cleanup of Pit 4 will save about $430,000.

During the first 18 work days, more than 400 drums and 500 cubic yards of miscellaneous debris were removed. Removed debris and drums are being decontaminated, transported, and placed in interim storage. Workers are also recycling water, concrete, riprap, and roll-off containers to minimize waste. Cleanup of Pit 4 will be completed by the end of 1997.

Internet users can learn more about the Weldon Spring Site by visiting its Home Page at <http:\\www.em.doe.gov/wssrap>. For more information contact Ed Valdez at 314-441-8978.

Above: Workers consolidating PCB-contaminated drums in Pit 4

Below: Some of the more than 2,000 drums in Pit 4 awaiting removal



SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Final Tests Begin at West Valley

The countdown to commencing operations at the West Valley Demonstration Project continues; integrated testing began in May. The Department of Energy (DOE) project, which is located 35 miles south of Buffalo, New York, is slated to begin full-scale vitrification of high-level radioactive waste in July.

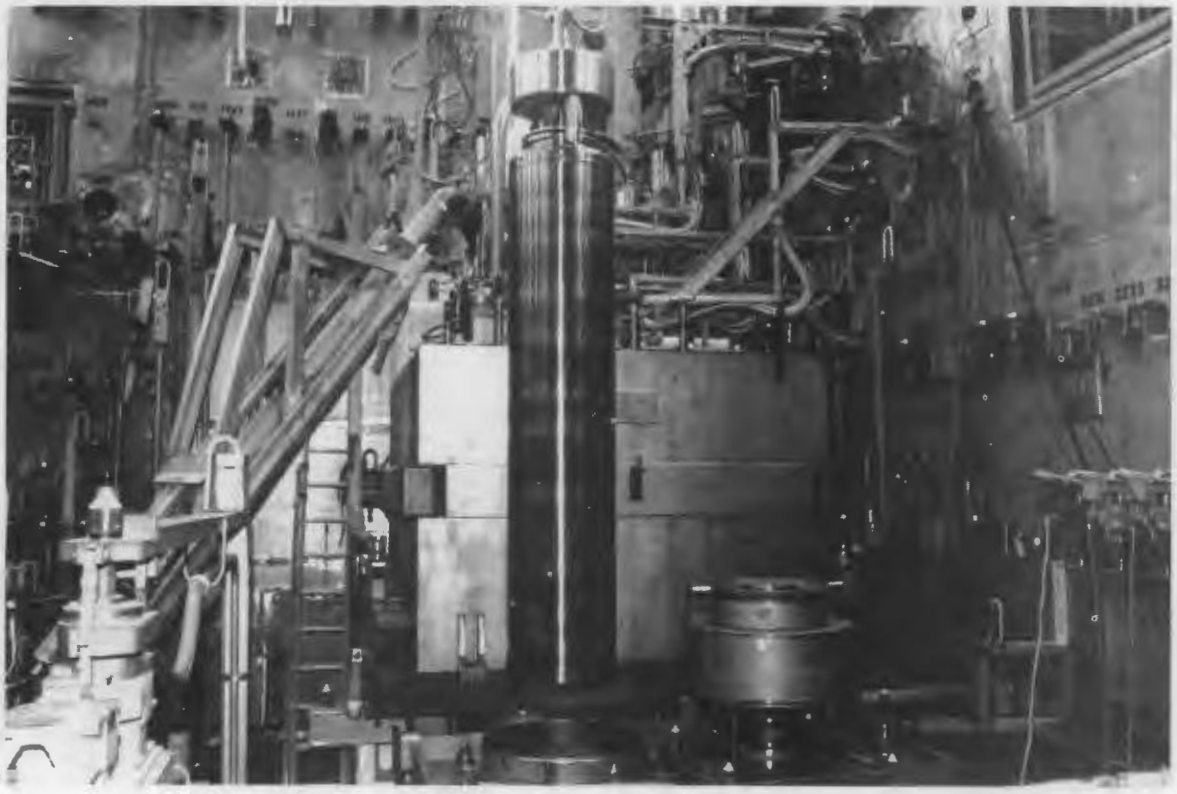
Westinghouse/West Valley Nuclear Services Company engineers and operations personnel successfully operated all of the main vitrification and support systems remotely. The nonradioactive testing included loading, filling, and storing the stainless steel canisters which will hold the solidified liquid waste when actual radioactive processing operations begin.

Operators staff the vitrification control room at the West Valley Demonstration Project site.

The testing provided operational readiness review teams with an opportunity to assess the readiness of vitrification equipment and processes.

This effort will culminate years of planning, designing, constructing, testing, and reviewing by DOE and its project partner, the New York State Energy Research and Development Authority.

For more information contact Rick Provencher at 716-942-4101 or Russ Gill at 716-942-4547. ➡



A crane lifts a canister of test glass at the West Valley Demonstration Project. Waste solidification operations are scheduled to begin this summer.

SITE SUCCESS STORIES...SITE SUCCESS STORIES...SITE

Oak Ridge Recycling Sale Nears Completion

The proposed sale of 9,400 tons of lightly contaminated, high-value nickel to a private United States firm has passed an important hurdle with the completion of an environmental assessment and a finding of no significant impact. The metal, which comes from the Oak Ridge Reservation, will be decontaminated by the firm to meet European Union and International Atomic Energy Agency guidelines; it will then be sold to a Spanish company for use in stainless steel production. Although the material will not undergo a regulated release in the United States, it will be decontaminated to well below international levels.

The sale also includes about 50,000 tons of contaminated scrap metal. The United States firm will decontaminate most of the metal for domestic recycling. Metals that cannot meet Nuclear Regulatory Commission (NRC) standards will be retained for fabrication into nuclear-use products such as accelerator shield blocks and waste containers for the Department of Energy (DOE) or the nuclear industry.

This project has undergone an unprecedented review due to the controversy over recycling decontaminated materials in the international marketplace. NRC has overseen the sale, and the Department of State conducted an executive level inter-agency review to ensure that the material did not constitute a proliferation threat. In addition, DOE officials consulted with other agencies on the matter. After the review, the Government of Spain agreed to the proposal, and an environmental assessment was prepared. The environmental assessment verified that the transaction was protective of human health and the environment and achieved DOE's goal of ensuring that contaminated material is decontaminated to levels as low as reasonably achievable.

This sale creates a significant precedent, establishing decontamination and recycling as a viable alternative to indiscriminate disposal of lightly contaminated metal. In addition, the sale is allowing DOE to recycle more than 60,000 tons of metal with minimal impact to its budget, creating economic ramifications as significant as the regulatory precedent it sets.

For more information call Bill Cahill at 423-241-4830 or Judson Lilly at 301-903-7218. ➨

Oak Ridge Recycling Effort Sees the Light

More than 120,000 lamps used annually at five sites managed by the Oak Ridge Reservation will be put back in circulation, thanks to a newly instituted recycling program. Previously, Lockheed Martin Energy Systems, one of the reservation's contractors, had crushed and disposed of the fluorescent lamps as mixed waste. Now, however, lamps from the reservation's three sites, as well as from the Portsmouth, Ohio, and Paducah, Kentucky, sites will be recycled into reusable glass and metal products.

Lamp aluminum end caps, insulators, and wires will be separated from the glass, melted, and reused. The glass will be reused in concrete, fiberglass insulation, or non-food glass products. By recycling the lamps, the reservation will save thousands of dollars; crushing the spent lamps costs approximately $3.30 per lamp, while recycling each unit costs about $2.19.

For more information contact Karen Catlett at 423-241-2224 or Wayne McKinney at 423-576-6284. ➨

Editor's Note

Several readers have written or called with questions (even a complaint) about how the newsletter is produced and distributed; consequently, I thought I'd take this opportunity to explain the process.

EM Progress is produced quarterly; about two months before its publication date, Dave Simon solicits submissions from the Environmental Management community. Stories drift in over the next month, and Dave and I begin our work in earnest. After the pieces are edited and the newsletter designed, I work with the issue's 10-30 authors to finalize copy and art. Next up is concurrence; program reviewers weigh in with their opinions, which are also incorporated. Then the newsletter is shipped off to the printing office. Each issue is handled by a different vendor who prints, labels, and mails the newsletters. Distribution has time and time again proven the most difficult variable; new problems arise with each issue. Though Dave and I make every effort to supply readers with timely, accurate, and interesting program information, we cannot always control when an issue will arrive in your mailbox.

Holly Larson, *Editor* ➨

Portsmouth Fair Brings Science to Students

Nearly 2,400 sixth graders from southern Ohio and northern Kentucky converged on the Shawnee State University campus to attend the second annual Portsmouth (Ohio) EnvironMENTAL Fair. The fair, held May 9, 1996, brought students and teachers from 31 different schools together with environmental experts from the Portsmouth Gaseous Diffusion Plant, the university, and many other State and local organizations.

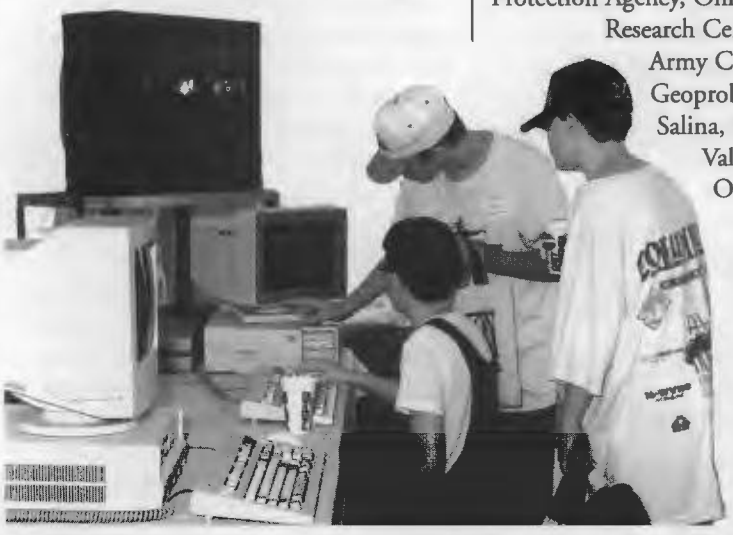
Elementary school children from two States flocked to the fair.

Students competed in timed games in the fair's "Litter Olympics," surfed the Internet as part of the Environet activity, participated in "Wetlands Jeopardy," and learned how to separate recyclables in "Stone Age Segregation."

Eugene Gillespie, the Portsmouth site manager, attributed part of the fair's success to the rural location of the schools served and their budget constraints. "Many schools can no longer afford to take students to a large science museum like the Center of Science and Industry in Columbus, Ohio, and many are limited to one field trip a year. We are providing an opportunity for these students to be exposed to a science and environmental education that they may not have received otherwise."

Fair activity sponsors included the plant, university, Ohio Environmental Protection Agency, Ohio State University Research Center, United States Army Corps of Engineers, Geoprobe Systems, Inc. of Salina, Kansas and Ohio Valley area libraries, Ohio Department of Development's Office of Energy Efficiency, Ohio Division of Forestry and Shawnee State Forest, Hopewell Culture National Historical Park, and area soil and water conservation district offices.

For more information contact Kristi Wiehle at 614-897-5020.



***Above:** Students use computers to access the Internet and look up environmental information.*
***Right:** A student pedals the "energy cycle," an activity sponsored by the Ohio Department of Development's Office of Energy Efficiency to demonstrate how different light bulbs and appliances use varying amounts of energy.*

Department Conducts Complex-Wide Review of Low-Level Waste

In response to a recommendation from the Defense Nuclear Facilities Safety Board, a Department of Energy (DOE) team undertook a comprehensive review of the agency's low-level waste; the review focused on managing low-level waste and the radioactive component of mixed low-level waste (see related story on this page). A final report was delivered to the Board on May 17, 1996.

The report identified 45 site-specific vulnerabilities at the 38 sites that handle these types of waste (see map below), none of which posed high or immediate risks; approximately two-thirds presented low risks to workers, the public, and the environment. Nonetheless, rectifying these vulnerabilities is essential if the Department wishes to maintain facilities' long-term protectiveness and maximize disposal performance. More than one-half of the identified site-specific vulnerabilities impact disposal activities; 22 percent affect generation activities; and 16 percent influence storage activities.

As a next step, the reviewing team grouped, classified, and evaluated site-specific vulnerabilities to arrive at complex-wide weaknesses. The six complex-wide vulnerabilities are:

- insufficient forecasting and capacity planning
- ineffective characterization
- continued storage of waste ready for dispositioning
- inadequate storage conditions
- unidentified technical paths for disposition of certain wastes
- unapproved or inadequate performance assessments

Complex-wide vulnerabilities are attributable to inadequate and piecemeal requirements, inconsistently implemented program requirements, and a lack of national perspective on low-level waste management policies.

The reviewing team developed three general recommendations to address complex-wide vulnerabilities: identify inadequacies in management requirements and develop more comprehensive ones; target a complex-wide consistency level for implementing requirements and generate guidance to achieve goals; and promote a complex-wide perspective among senior managers and sites.

For more information contact Martin Letourneau at 301-903-7656 or Adrian Gardner at 202-586-6984.

Note: some dots represent more than one site.

Department of Energy low-level waste is managed at 38 of its sites across the country.

Low-Level Waste Issues Take Center Stage

A Defense Nuclear Facilities Safety Board (DNFSB) recommendation has spurred changes in the way the Department of Energy (DOE) is managing low-level waste. In its 1994 report *Conformance with Safety Standards at DOE Low-Level Nuclear Waste and Disposal Sites,* the DNFSB noted that DOE's low-level waste program had not kept pace with its commercial counterparts. For example, DOE low-level waste disposal facilities had not completed radiological performance assessments as had commercial facilities. The Board also recommended that DOE change its assessment methodology.

In response to the Board's critique, DOE began conducting a complex-wide review of its low-level waste program, evaluating its radiological performance assessment methods, and revising DOE Order 5820.2A: Radioactive Waste Management. These efforts are discussed in DOE's March 1995 "Implementation Plan: Defense Nuclear Facilities Safety Board Recommendation 94-2" (see related story at left). The plan outlines DOE's commitments which include completing performance and system assessments and conducting a review of relevant regulations. A revised plan has been submitted to the DNFSB for its approval. DOE is committed to working with the Board to implement low-level waste requirements that enhance the protection of workers, the public, and the environment.

For more information contact Martin Letourneau at 301-903-7656.

SRS Vitrification Facility Begins Work

The Savannah River Site's Defense Waste Processing Facility has reached another major milestone. The facility, which opened in March, has been cleared to begin solidifying the thousands of gallons of liquid high-level waste stored at the site. The vitrification process heats liquid high-level waste and molten glass to 2,200° Fahrenheit. The resulting molten mixture is poured into a 10-foot tall, two-foot diameter stainless steel canister to cool and harden. The facility will fill about 6,000 canisters over the next 25 years. The radioactive glass canisters will be temporarily stored onsite until they can be shipped to a geological repository for underground disposal.

For more information contact Ralph Erickson at 301-903-7188.

Technical Team Solves Problems at DOE Sites Nationwide

Department of Energy (DOE) sites have a new resource to help them handle technical challenges: the Defense Programs Core Technical Group (CTG). This team, which already numbers over 250, includes technical experts from the Oakland, Albuquerque, Nevada, and Oak Ridge Operations Offices and DOE Headquarters. With Under Secretary Tom Grumbly's endorsement, the CTG is expanding to include Environmental Management technical experts; subject matter experts in safety functions will be added first.

The CTG service desk uses a database to assemble the correct mix of knowledge and expertise to meet each customer's request. Group members can work by teleconferencing, videoconferencing, e-mail, or other means to provide support, or travel to sites. One recent customer, Mark Lee of the Oakland Site Management Division, contacted the CTG to perform a criticality appraisal at a Lawrence Livermore National Laboratory facility. The service desk not only put together a team, but also facilitated security arrangements, travel, and other logistics. Pleased with the outcome, Mark Lee said he "would not hesitate to use the CTG again."

To request CTG support you can send an e-mail message (ctg@dp.doe.gov), fax a service request (301-903-3414), or call (301-903-8525). The team also has an informational video which describes the CTG process.

For more information call John Kaysak at 202-586-0108.

EM Slogan

The EM slogan contest continues, with contributors dividing into two camps: punsters and pundits. A quick synopsis of slogans to date:

The lean, mean, cleaning machine

EM: cleanup progress by projects

By 2015 EM will get it clean!

EM: Earth and mankind—a team for all time

We kept the peace; now we're closing the circle

EM: Expecting the most

Partnering to protect ourselves, our environment, and our future

EM: Preventing tomorrow's problems today by cleaning up yesterday's

America: One Nation under Environmental Management

EM: Leaders in the Nation's environmental challenges

Managing environmental technologies and risks today for a safer cleanup tomorrow

EM: Overcoming the Cold War legacy

Reclaiming the past to secure the future

EM: Conquering the last Cold War enemy

and a host of capitalization puns:

EMbarking on environmental accomplishment

EMbracing environmental excellence

EMbodying environmental achievEMent

and again: last issue's mottoes make another appearance

Baseline: For less than 100 billion in less than 10 million minutes

EM: Responsible steward for the nuclear complex cleanup

EM: Managing today's waste to create a safer tomorrow

Two sites clean by 2018

EM: Responsibly managing DOE's Cold War legacy for future generations

Two sites at an end by 2010

Half the risks by 2006

Reducing waste to increase faith in a clean America

Please vote on your favorite three mottoes and e-mail Dave Simon with the results: <David.Simon@em.doe.gov>.

Our most unique entry:

"2010: A Waste Odyssey"
Cleanup may not be rocket science, but surely the waste monolith before us is conquerable if we beat on it with a new and different set of physical, management, and stakeholder tools.

Inventory, *continued from page 2*

To ensure that current inventories are appropriate for planned programs and that unneeded materials are identified and dispositioned promptly, the Department will:

- Establish policies to promote timely, cost-effective materials management
- Eliminate policy and legal barriers to dispositioning inventory materials
- Develop strategies that promote reuse and exchange
- Hold Departmental programs accountable for materials management costs
- Work cooperatively with stakeholders to implement the recommendations of ongoing inventory assessment efforts.

Individual Departmental offices will lead the effort to develop recommendations for new policies, requirements, and incentives, as well as changes to existing ones. As an initial step, field office managers, in consultation with their respective assistant secretaries, are to identify which Departmental program is responsible for inventoried materials at their sites. Furthermore, they are to identify materials for which a program mission need cannot be demonstrated within the next three years, or if a program mission is identified, what the materials would be used for after three years.

For more information contact Suzanne Rudzinski or Tobin Freid at 202-586-4373.

Oak Ridge Teams with Russia to Develop New Technology

The Oak Ridge Reservation was the site of international collaboration March 4-5, 1996; United States and Russian scientists gathered at a workshop on electrokinetics to discuss the technology's development and future use at contaminated sites in both countries. Electrokinetics uses a direct current of electricity to move ionic materials through soil or water between electrodes. Once the ions are relocated to the appropriate electrode, they are collected and removed from the contaminated plume.

The scientists are conducting collaborative tests to demonstrate the technology's effectiveness and feasibility at sites in Oak Ridge, Tennessee, and Russia. In 1996 a pilot-scale study was performed at a contractor facility in Oak Ridge using contaminated soil from the K-25 Site; a field demonstration is planned for 1997 at the K-25 Site. The tests seek to demonstrate the success of electrokinetics in removing radioactive material from waste solutions generated during fuel reprocessing and decontamination and decommissioning activities and metallic contaminants from soil and ground water.

For more information contact Walter Perry at 423-241-6417.

A typical electrokinetics configuration

Public Water Hookups to Protect Citizens Near Brookhaven

To protect residents living near the Brookhaven National Laboratory on Long Island, New York, the Department of Energy is hooking them up to public water. About 450 residents of North Shirley and East Yaphank who live south of the laboratory will be connected this spring; another 400 citizens who live further south in the towns of Shirley and Mastic will be hooked up beginning July 1, 1996. These actions are designed to protect residents from plumes of volatile organic compounds which have migrated off laboratory property. While resident wells have tested negative for lab-related contamination, the Department ordered the hookups as a precaution. Other planned measures include constructing a treatment plant to contain ground water.

For more information call Rich Freeman at 708-252-2645.

☆☆☆AWARDS☆☆☆

FUSRAP Honored for Pollution Prevention Efforts

Cleanup work at the General Motors (GM) Site in Adrian, Michigan, has earned the Formerly Utilized Sites Remedial Action Program kudos and pollution prevention awards for two activities.

The program connected a pneumatically deployed radiation detection instrument to a long, flexible cable and pulled it through the piping system to detect radiation in subfloor pipes and drains. The instrument's pressurized membrane prevented the sensitive instrument from scraping the pipes and eradicated the need to excavate.

"The technology made it possible to survey more than 1,000 linear feet of drain line in just one week, without having to excavate any overbearing material," said Department of Energy Site Manager Jim Kopotic.

The second award was given for front-end planning and design at the GM Site which saved the program more than $1.6 million. "We greatly reduced waste volumes [and] saved over $20 per gallon on waste water disposal, while imposing minimal disruption to GM's ongoing plant operations," said Kopotic.

Both activities, plus two others, have been submitted for the national Departmental pollution prevention awards. The other nominations are for a rock crusher which smashes rubble and debris so that it can be reused beneficially and supplemental cleanup standards adopted to reduce waste volumes at the Chapman Valve Site.

For more information contact
Al Johnson at 301-903-7226.

Two Sites Recognized for Environmental Excellence

Two Department of Energy sites, the Savannah River Site and Pantex Plant, recently received "Closing the Circle" awards from the White House. The awards were created to honor superior environmental performance by Federal agencies. The Savannah River Site won for its newly established chemical commodity management center which handles the acquisition, inventory control, and redistribution of materials used by up to 18,000 sources at the 300-square-mile site. The center redistributes excess chemicals instead of purchasing new ones.

The Pantex Plant was acknowledged for its pledge to clean up all environmental restoration sites by the year 2000 as part of the "Clean Texas 2000" program. Pantex has been recognized as a leader in recycling and waste management.

For more information contact
Ron McHugh at 202-586-7228.

Department Aids in Cleaning Up Commercial Spill

A Department of Energy (DOE) program recently received kudos for training local responders on how to handle a commercial radioactive waste spill. On March 31, 1996, fire department personnel from Laramie, Wyoming, were called to the scene when a commercial transportation carrier spilled a radiological substance on a nearby highway. The local responders, who had received emergency response training through a Waste Isolation Pilot Plant (WIPP) program, quickly and efficiently secured the area near the spill and assisted the carrier team in repackaging the leaky container.

"The WIPP program is excellent," said Chuck Fraley, radiological response coordinator for the State, who was present at the cleanup. "The training performed under the DOE contract along U.S. Interstate 80 proved to be effective for the local responders. They knew exactly what they could and could not do. We had little to do when we arrived on the scene, which is a tribute to the training provided by the DOE and Westinghouse."

Since 1988 DOE and the Westinghouse Electric Corporation, the plant's managing and operating contractor, have worked with States along proposed transuranic waste shipping routes to train personnel in emergency procedures.

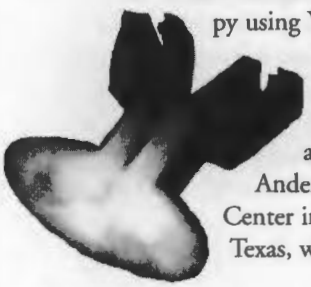
For more information contact
Patty Baratti-Sallani at 505-234-7313.

Hanford Nuclear Materials Contain Valuable Isotopes for Cancer Therapy

In the course of forty-plus years of plutonium production, the Hanford Site created a vast amount of nuclear by-product materials. These materials contain radioisotopes of enormous value for use in medicine, laboratory research, industrial and agricultural processes, and food sterilization. Recently, radioisotopes retrieved from Hanford's stored nuclear materials have been used in a new form of cancer therapy. This treatment, radioimmunotherapy, links a radioisotope to an antibody that transports the isotope to cancer cells in the body. The antibodies specifically target cancer cells, allowing the isotope to deliver its lethal radiation selectively, sparing normal tissue cells in other regions of the body.

Antibodies labeled with radioisotopes target malignant cancer cells.

During the past five years, several major cancer treatment centers in the United States have demonstrated the effectiveness of radioimmunotherapy using Yttrium-90. The largest trial to date took place at the M.D. Anderson Cancer Center in Houston, Texas, where more than 100 patients with Hodgkin's lymphoma were treated with antibodies labeled with Yttrium-90 produced at Hanford. More than 80 percent of these patients, all of whom failed to respond to conventional radiotherapy and chemotherapy, responded positively to radioimmunotherapy. And the patients experienced fewer adverse side effects, such as nausea and hair loss, than their conventionally treated counterparts.



Similar promising results have been obtained at the Fred Hutchinson Cancer Center and the University of Washington Medical Center in Seattle, Washington, where physicians have treated leukemia and lymphoma patients with antibodies labeled with Iodine-131, a beta and gamma emitter. Doctors are now extending use of the radiolabeled antibody technique to other types of cancer, including lung, breast, ovarian, prostate, and brain tumors. Clinical trials using Yttrium-90 for these types of cancer are taking place at major medical centers in Washington, Colorado, California, and Maryland. If the trials demonstrate the radiolabeled antibodies' efficacy for treating these major classes of tumors, the Food and Drug Administration could grant approval for widespread clinical use of Yttrium-90 within the next five years. In addition, clinical work in Europe has

Medicine, *continued on page 13*

Al Alm Steps In to Head EM Program

After a lengthy confirmation process, Al Alm was sworn in May 6, 1996, as Assistant Secretary of the Department of Energy's Environmental Management program, filling the position recently vacated by Tom Grumbly. Alm has held executive positions with several high-tech companies, including Science Applications International Corporation, Alliance Technologies Corporation, and Thermal Analytical Corporation. He has also served as co-chair of the Environmental Management Advisory Board.

In his new position, Alm is responsible for directing environmental management activities in the Nation's nuclear weapons complex, including waste management operations, environmental restoration, nuclear material and facility stabilization, and technology development.

Commenting about Alm's new position, Secretary of Energy Hazel O'Leary said, "I look forward to working more closely with him on the difficult task of safely cleaning up our Nation's nuclear weapons complex."

For more information contact Jayne Brady or Keith Holloway at 202-586-5806.

See related article on page 1.

Leadership, *continued from page 1*

While we speed up the pace of the program and cut costs, we must make strong efforts to assure worker safety, for it is the workers at the DOE sites that face the greatest risks. I do not believe that an aggressive program need be more risky; indeed, a well-managed program should be able to achieve both a more cost-effective and a safer program.

Finally, we must work closely with regulators, local officials, tribal leaders, and other stakeholders at our sites. Credibility and collaboration are keys to public trust, which in turn, is key to progress. I cannot achieve these objectives without your help and support. I pledge that I will listen to your ideas, that I will trust your integrity and support you publicly in the conduct of operations. My obligation to you is to lead all of us to success.

Since most of you do not know me, I would like to tell you a little about my management style and what I will expect from you. I believe strongly in teamwork and participation. I will work hard to develop a team that transcends stovepipe and headquarters/ field conflicts. I will operate a decision making process that is participatory and open. I will listen to a range of views and will encourage dissent. My goal is to make your work challenging, satisfying, and fun. All of us should look forward to coming to work in the morning.

There are some areas where I will be demanding. I am a stickler for meeting commitments. I will be accommodating about setting deadlines, but am most intolerant when they are not achieved. I expect you to be open and honest with me and with each other. If you believe I do not understand an issue, tell me. I pledge to work to understand all issues; if I do not, someone has failed to educate me, since I am committed to work until I do so.

At the beginning of this memorandum, I commented that the Environmental Management program is at a crossroads. Let me explain what I mean.

The seven-year balanced budget that Congress is likely to enact will place severe strains on all discretionary funding, including funds for the EM program. Unless we can make the case that the program will reduce long-term obligations on the American public, I believe the EM program is in jeopardy. We have an opportunity to show that a ten-year effort to reduce risks and mortgage costs can substantially reduce obligations and risk on future generations.

We have an historic opportunity. I look forward to working with all of you on this exciting and awesome challenge.

For more information contact Dave Simon at 202-586-4253.

Assistant Secretary Al Alm's vision for the Environmental Management program will be guided by the following seven principles:

1. Eliminate and manage the most urgent risks
2. Reduce mortgage and support costs to free up funds for further risk reduction
3. Protect worker health and safety
4. Reduce generation of wastes
5. Create a collaborative relationship between DOE and its regulators and stakeholders
6. Focus technology development on cost and risk reduction
7. Integrate waste treatment and disposal across sites

Medicine, *continued from page 12*

demonstrated that Yttrium-90 may be effective in treating arthritis.

Other isotopic possibilities abound. The short-lived, alpha-emitting isotopes such as Bismuth-213 and Radium-223 may also be effective in treating cancer. Large quantities of Cesium-137 could be used as a radiation source for food irradiators and for equipment used to sterilize surgical instruments, blood, and disposable medical products. Other stored isotopes such as Americium-241 and Curium-244 could be used as radiotracers; standard radiation sources for instrument calibrations; and as components of smoke detectors, oil-well logging equipment, and other commercial products. Because of the numerous applications of radioistopes that can be recovered from stored nuclear materials, Hanford scientists are developing new ways to isolate, purify, and deploy these isotopes.

A researcher prepares Yttrium-90 at a hot cell. Promising results with this radioisotope have been obtained in early cancer therapy trials.

For more information contact Thomas S. Tenforde, Ph.D., at 509-376-1939.

See related article on page 12.

Pollution Prevention Effort Moves Forward

On May 3, 1996, Department of Energy Secretary Hazel O'Leary unveiled seven new goals designed to reduce waste and pollution generation at Departmental sites nationwide. The goals, which use 1993 as a baseline year, are slated for accomplishment by December 31, 1999. They are:

For routine laboratory and production operations:

- Reduce generation of radioactive waste by 50 percent
- Reduce generation of hazardous waste by 50 percent
- Reduce generation of low-level mixed waste by 50 percent
- Reduce generation of sanitary waste by 33 percent
- Reduce the total release and offsite transfers of toxic chemicals for treatment and disposal by 50 percent

For all operations, including cleanup and stabilization activities:

- Recycle 33 percent of sanitary waste

For affirmative procurement:

- Increase procurement of Environmental Protection Agency-designated recycled products to 100 percent, except where they are not commercially available at a reasonable price or do not meet performance standards

In addition, the Secretary approved the 1996 Pollution Prevention Program Plan which was issued in May 1996. The plan provides guidance for achieving these goals and institutes performance measures for charting progress. The Secretary's Annual Report on Waste Generation and Waste Minimization Progress will document the Department's successes on a yearly basis.

In her memorandum to department heads announcing the goals, the Secretary stated that "it is the responsibility of each Federal and contractor manager to work diligently to meet these goals; to aggressively seek ways to reduce the amount of pollutants generated within the workplace; and to conserve, reuse, and recycle resources."

For more information contact Susan Weber at 301-903-1388. ➨

GJPO Gift Helps Students Learn the ABCs of PCs

A gift of surplus computers by the Department of Energy's Grand Junction Project Office (GJPO) is enabling a local school to open a new computer laboratory for its students. Clifton Elementary School in Grand Junction, Colorado, received 10 computers and a printer from GJPO, a participant in the agency's Math and Science Equipment Gift Program. The program supplies excess education-related and federal research equipment to elementary and secondary schools nationwide.

"We're going to double the time the students will have with the machines," said David Fricke, principal of Clifton Elementary School, where more than 700 students use computers to learn math, social studies, geography, typing, and reading. "I'd like to thank the Department of Energy for taking the time and trouble to help out our local schools. We really appreciate it."

Clifton was one of 15 area Colorado schools that received a total of 140 excess computers and 59 printers. GJPO also gave 10 computers and seven printers to a school in Monticello, Utah, where project contractors are remediating sites contaminated with radioactive uranium mill tailings.

For more information contact Audrey Berry at 970-248-7727. ➨

Justin Malloy, Mary Ellen Haiaer, students, and Diana Walcher, computer instructor, load their new computer into a vehicle for transportation to Clifton Elementary School.

Team Studies Research Reactor Spent Nuclear Fuel Issue

In November 1995 the Department of Energy's Office of Spent Fuel Management tapped Federal employees and contractors to serve on a research reactor spent nuclear fuel task team. The team's assignment was to develop a technical strategy for handling the interim management and ultimate disposition of foreign and domestic aluminum-based research reactor spent nuclear fuel under the Department's jurisdiction. The plan had to address both the current inventory of fuel and anticipate future receipts.

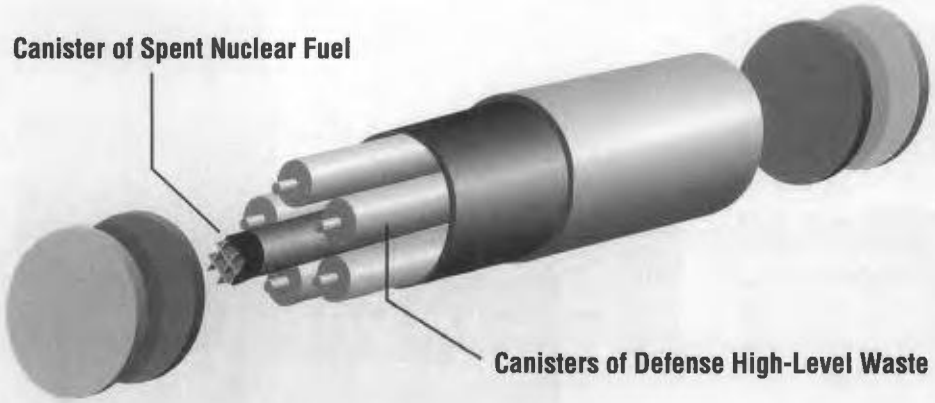
To handle this task, the team evaluated and compared different treatment technologies, as well as handling, packaging, and storage systems. All processes were assessed as to whether or not they would provide for safe and cost-effective interim storage and prepare the fuel for ultimate disposal in a geologic repository. Eleven technologies were considered initially; eight were evaluated in-depth. The team rated the technical suitability, cost, schedule, and technical maturity of the eight processes before arriving at their recommendations.

The team's recommendations are:

- The Department should begin developing a direct disposal technology. The team recommended packaging the aluminum-based fuel with defense high-level waste in a package, as shown in the graphic below.
- Because of potential regulatory issues involved with disposing of highly enriched aluminum-based fuel in a repository, the Department should also develop a uranium dilution technology to back up its preferred disposition solution.
- The Department should also begin planning, funding, and undertaking the conceptual design of a transfer facility. The facility would be used in conjunction with any of the treatment technologies under consideration.

A final report, *Technical Strategy for the Treatment, Packaging, and Disposal of Aluminum-Based Spent Nuclear Fuel* (June 1996) summarizes the team's evaluation, findings, and recommendations.

For more information contact Howard Eckert at 301-903-7173.



A co-disposal waste package

Rocky Flats Moves Forward on Closing Operable Units

The Rocky Flats Environmental Technology Site is making progress on closing out several of its operable units. By the end of 1996, the site intends to have completed Corrective Action Decisions/Records of Decision for Operable Units 1, 3, 5, and 6. The site anticipates receiving no further action decisions on units 3, 5, and 6, which will allow it to close out the units immediately. Operable Unit 1, which consists of 11 individual hazardous substance sites, may require remediation. The Rocky Flats Field Office has begun the process of preparing the documents, which were not included in the on-site performance-based integrating contractor's workplans, to accelerate the cleanup process.

For more information contact Kevin Keenan at 303-966-9701.

Credits

EM Progress is published quarterly. To learn more about the newsletter, or how to submit an article, please contact either Dave Simon or Holly Larson at the phone numbers listed below.

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On-line with FUSRAP

The government is going global on the World Wide Web; yet another Department of Energy program has added a Home Page to the Internet. This time, it is the Formerly Utilized Sites Remedial Action Program that is announcing its presence with a United States map showing the location of its 46 cleanup sites in 14 States; site descriptions; and factsheets on program-related topics such as site histories, environmental laws, and regulations; and public participation opportunities. In the future, the program plans to add an administrative record index, downloadable project documents, and site newsletters.

The Home Page is linked to several Web sites, including the Environmental Management Home Page and the Oak Ridge Operations Office Home Page. Users can provide feedback or send comments to program officials via e-mail.

Internet users can access the FUSRAP Home Page at <http:\\www.fusrap.doe.gov>. For more information contact Steven Wyatt at 423-576-0885. ➨

EM PROGRESS

Comments

We are interested in receiving your comments—what you like and what you don't like—about *EM Progress*. Your views, comments, and suggestions are appreciated.

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Look for the Fall 1996 issue of *EM Progress* to be distributed in mid-September!

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

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EM Change Summit Snares Award, Provides Impetus for Similar Events

A Department of Energy (DOE) Office of Environmental Management (EM) team has received kudos in print and public for its work organizing DOE's first "change summit." Featured in a recent issue of *Government Executive*, the team also received a Hammer Award for its work. Secretary Hazel O'Leary presented the team, or in summit lingo, "change gang," with the award on November 2, 1995. The Hammer Awards were created by Vice President Al Gore to recognize efforts to streamline and to improve the Federal Government.

More than 170 DOE managers and employees attended the September 7-8, 1995, event. The summit, which was held in Denver, CO, was sponsored by the EM Corporate Forum, a senior management council headed by Assistant Secretary Tom Grumbly, and hosted by the Rocky Flats Environmental Technology Site. Participants, or "change agents," signed a letter to President Clinton pledging to achieve more than $219 million in savings by accelerating site closures, improving reporting and tracking systems, and undertaking other activities. EM's Principal Deputy Assistant Secretary Admiral Rich Guimond exhorted participants to continue taking the necessary risks to achieve dramatic, cost-cutting results.

Change gang members met with Secretary O'Leary on November 27, 1995, and obtained her endorsement to hold summits complex-wide. Team members kicked off 1996 with a change summit at Oak Ridge, TN, and they plan to hold additional events at other sites in the future. A Headquarters-wide summit was held April 9-10, 1996, in Gaithersburg, MD.

Change gang members include Joe Wienand and Dave Hicks from the Rocky Flats Environmental Technology Site, Tom Treger from the Savannah River Site, John Evett and Mona Williams from the Albuquerque Operations Office, Randy Harris and Kelly Kelkenberg from the Office of Environmental Restoration, Malika Hobbs from the Office of Management and Evaluation, Suzy Riddle from the Oak Ridge Reservation, Caroline Polanish from the Brookhaven National Laboratory, Scott Van Camp from the Office of Waste Management, and Don Beck from the Office of Planning, Policy, and Budget.

Change *continued on page 6*

"Breakthrough Management" Hits Rocky Flats

In late 1995 Department of Energy Environmental Management (EM) program personnel at the Rocky Flats Environmental Technology Site found themselves facing a problem that offered no easy solutions, a common situation in the world of environmental remediation. The site's six wastewater treatment plants, constructed before the era of rigorous environmental legislation, were creating more mixed waste than they processed. Wastewater containing nonradioactive hazardous waste was routed through the same underground piping and tanks as wastewater containing hazardous waste. The seemingly obvious solution, tearing down and rerouting the underground system, was not feasible because of budget limitations.

Two of the site managers grappling with this issue, Joe Wienand and Jeff Kerridge, also doubled as EM Fellows, members of an elite group of 34 mid-level managers and technical staff. The Fellows had been selected to participate in a year-long program to learn about innovative private-sector management techniques so that they could apply them to Departmental dilemmas. The program, championed by Principal Deputy Assistant Secretary Rich Guimond, was conducted by the nonprof-

Breakthrough *continued on page 8*

In This Issue...

Change Summit Inspires Participants 1

Mound Plant Ships Low-Level Waste Offsite 2

Rocky Flats Site Manager Honored 2

Hanford Remediation Projects Prove Faster, Cheaper Than Planned 5

EM Motto Still Up for Grabs 9

Two Technologies Protect Workers 10

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Offsite Shipment Expands Mound Plant Disposal Options

At the Department of Energy's (DOE) Mound Plant, initiatives to reduce inventories of low-level radioactive waste and disposal costs are producing dramatic results. The key to the plant's waste management accomplishments—now estimated to approach $188 million in cost savings over the next 10 years—is a partnership between DOE and a private company. The plant has started shipping its low-level waste to Envirocare of Utah, Inc.

Before the plant could begin offsite shipment, it had to obtain an exemption from a DOE order that requires that Departmental low-level wastes be disposed of at its facilities. Because of the cost savings associated with offsite shipments, the plant was granted an exemption in April 1995. The first shipment left the facility on July 24, 1995, just twelve weeks after the approval date.

Offsite shipping is saving the plant money in multiple ways. Removing 26,000 cubic yards of soil from the Miami-Erie Canal and shipping it to Envirocare will cost approximately $10 million, $14 million less than shipping the soil to a DOE facility. If the waste is shipped conventionally, the site will pay $100 to reuse and return each metal shipping container, $400 less than the cost of purchasing a new box. Wastes that can be shipped by Supersack, a newly-developed polypropylene/polyethylene bag suitable for holding soil, rocks, and other low-level radioactive wastes, will be even more cost-effectively transported. The five-pound bag, which can hold up to 45 cubic feet or 4,000 pounds of material, costs a little less than $30 a bag. In addition, the bag is disposable, thus incurring no return costs.

The plant began using the bags for shipments in February 1996 and plans to expand the bags' use to other programs at the site.

Finally, by using Envirocare, the plant is able to ship additional waste streams such as alpha and beta wastewater sludge. Since the beginning of fiscal year 1996, the plant has sent 56 shipments, each of which includes 62 drums of beta sludge, and 21 shipments, each of which holds eight boxes of alpha sludge, to the disposal facility.

For more information contact Rob Rothman at 513-865-3823.

Rocky Flats Manager Wins Achievement Award

Jessie Roberson, assistant manager for environment, safety, and health and program assessment at the Rocky Flats Environmental Technology Site, beat out more than 250 other nominees to snare a professional achievement award in February 1996. The honor, the 1996 Black Engineer of the Year Award for Professional Achievement in Government, recognizes Roberson's more than 16 years of nuclear engineering and management service. At Rocky Flats, Roberson currently manages a group of 100 scientists, geologists, and other specialists responsible for all remediation activities at the 6,500-acre site. In this capacity, she has been instrumental in accelerating closure of two operable units, saving the Department of Energy $9 million. Previously, she held management positions with the Savannah River Site, Georgia Power, and Dupont.

For more information contact Heathere Evans at 303-966-5026.

Small Site Designation Speeds Progress at Sandia

Remediation goals at the Sandia National Laboratory will be completed within the next five years, thanks to the site's reclassification as a small site. Small site designation commits adequate funding to accomplish a five-year cleanup for less than $150 million. Sandia's previous projected remediation date was 2006.

Workers have already excavated and cleaned up three gas cylinder disposal pits at three remote locations south of Albuquerque, NM. Cylinder fragments, 97 intact cylinders, and other debris were found. More than 10,000 pounds of scrap steel and 3,000 pounds of aluminum were screened for radioactivity and recycled.

For more information contact Will Keener at 505-848-0038.

Perspectives

This page frequently features a guest editorial as part of the newsletter's regular series of guest editorials, "Perspectives." This feature allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Dave Simon, Office of Environmental Management, EM-22, U.S. Department of Energy, Washington, DC 20585. Phone: 202-586-4253; fax: 202-586-0293.

Headway at Hanford

Privatization and Proposals Streamline Site Costs

The largest privatization effort in the Department of Energy's history is underway. The Hanford site recently issued a draft request for proposals (RFP) to treat and solidify its tank waste. Nearly 70 people representing almost 40 different groups attended the site's pre-solicitation conference and tour in November 1995. The final RFP was released in mid-February; contracts are scheduled to be awarded in August 1996.

The winning firm will build privately-owned and -operated facilities to immobilize the waste. The company will be paid a fixed price per waste unit once treatment is finished and the product delivered.

Upgrades of Hanford's 200 and 300 Areas will be handled with a performance-based contract. Hanford released a RFP in September 1995 to modernize the energy conservation systems in these two areas. Under the contract, the firm will supply materials, labor, operations, and up-front costs; the contractor will be repaid based on the site's energy cost savings, with up to 25 years to recoup its costs and achieve a negotiated profit.

* * *

Tank Farm Operations Improve

The site's 200 East Evaporator continues to save millions of dollars by freeing up storage space in existing tanks and eliminating the need to build new ones. To date, the evaporator has eliminated more than 2.1 million gallons of high-level waste water from sludge and more than seven million gallons of water from double shell tanks.

With the completion of the cross-site transfer line, waste will be pumped from older single shell tanks in the 200 West Area to newer double shell tanks in the 200 East Area. Moving the waste will improve storage conditions; many of the single shell tanks have leaked, while none of the double shell ones have.

The site also has improved its waste characterization capability. The site purchased two sampling trucks to take tank waste samples and increased its onsite laboratory's ability to handle additional waste samples.

* * *

New Technologies Are Developed

The Battelle Northwest National Laboratory has developed a new soil cleaning technology; the process heats contaminated soil with electrodes, vaporizes the chemicals, and traps them in its air filter. The clean soil is left in place.

Workers are also using bioremediation to clean up nitrate and carbon tetrachloride in site soil and ground water. A vinegar-like solution, which stimulates microbe growth, is added to the soil; the natural bacteria multiply and destroy contaminants.

* * *

Spent Fuel To Be Moved

Scientists are analyzing spent fuel samples from the site's K-Basins to determine how to transfer the fuel safely from wet to dry storage. The fuel, currently stored in basins near the Columbia River, will be moved to the 200 Area. The K-Basins, which were not designed for long-term storage, have leaked more than 15 million gallons of liquid waste.

The fuel will be repackaged into overpacks, cold-vacuumed dry at the basins, moved to the canister storage building, and hot-vacuumed dry. Finally, the units will be filled with an inert gas to prevent oxidation and stored until a waste repository becomes available. With the move, annual storage costs will drop from $35 million to about $1 million.

* * *

Untreated Discharges Halted

Untreated discharges are now a thing of the past. Two state-of-the art facilities are being used to treat contaminated waste streams and to remove chemicals before the water is released to the soil or Columbia River. The two plants, the 200 Area and 300 Area treatment effluent disposal facilities, meet Resource Conservation and Recovery Act requirements.

For more information contact Keith Taylor at 509-376-2282.

SRS Board Marks Second Year of Service

Since its inception two years ago, the Savannah River Site Citizens Advisory Board has made more than 16 recommendations to Federal and State environmental agencies. The board, which focuses on environmental cleanup and waste management, works with the Department of Energy (DOE), the Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control. Most recently, the board passed four recommendations on the site's high-level waste program, recommending that waste awaiting vitrification be disposed of at an offsite repository by the year 2028. Before reaching the recommendation, the board obtained and studied independent scientific peer reviews of many components of the waste program.

Among other issues, the board analyzed the future of site land; the board recommended that portions of the site be considered for solely industrial use. This recommendation is expected to save DOE more than $104 million in remediation funds. The board also has weighed in on how the site should handle receipt and potential processing of foreign research reactor spent nuclear fuel and has begun consideration of plutonium disposition.

For more information contact Virginia Gardner at 803-725-5752.

Site Success Stories...Site Success Stories...Site

FUSRAP Finishes Two Cleanups

The Formerly Utilized Remedial Action Program finished its 21st cleanup, the Chapman Valve Site in Indian Orchard, MA, in September 1995. Cleanup consisted of scrubbing and vacuuming portions of structural areas, walls, trusses, and equipment; and removing scrap and building material such as wood-block flooring at one end of Building 23. The facility is located on a 200-acre industrial complex owned by the Crane Company. Cost savings for the program were approximately $2.2 million.

The program completed its 22nd cleanup, the Baker Brothers Site, in early 1996. Thus far, 22 of the program's 46 sites have been remediated.

Approximately 400 cubic yards of contaminated materials were removed from the Baker Brothers Site in Toledo, OH, and shipped offsite for disposal. Remediation was completed for $2.5 million, 20 percent less than preliminary estimates.

For more information contact Melyssa Noe at 423-241-3315 or access the program's home page at <http://www.fusrap.doe.gov>.

The Baker Brothers Site, Toledo, OH.

Workers remediate the Chapman Valve Site in Indian Orchard, MA.

Lawrence Livermore Accelerates Cleanup of Three Operable Units

Lawrence Livermore National Laboratory has teamed with regulatory agencies, the Department of Energy's (DOE) Oakland Operations Office, and area stakeholders to streamline remediation of its Site 300 Experimental Test Site.

In 1994 the laboratory completed the remedial investigation for the 7,000-acre site, located about 60 miles east of San Francisco, CA. Typically, the laboratory would have been required to complete feasibility studies, proposed plans, and records of decision before it would be allowed to begin cleaning up contaminated ground water at three of the site's operable units. Instead, the laboratory is permitted to begin removal actions such as capping landfills, removing buried drums, controlling surface drainage, installing interception ditches, and undertaking other measures as needed. Regulators will allow DOE and the laboratory to substitute concise engineering evaluation and cost analysis documents for the more substantial conventional documentation. The laboratory will ultimately produce a single sitewide record of decision documenting removal actions, ground water monitoring plans, and contingency plans. These actions will save taxpayers millions of dollars, expedite site cleanup, and bring the entire remediation process to closure years sooner than originally anticipated.

For more information contact Albert L. Lamarre at 510-422-0757.

Site Success Stories...Site Success Stories...Site

Hanford Cleans Up

Construction of Central Landfill at Hanford Nears Completion

The Hanford site's environmental restoration disposal facility, a long, deep trench that will serve as the site's central landfill, is nearing completion. The trench, which will house both hazardous and mixed wastes, will be completed by July 1996, two months ahead of schedule and several million dollars under budget. Trench disposal costs will be among the lowest in the Nation, costing approximately $55 per cubic yard. Disposal costs at comparable sites around the nation range from $80 per cubic yard for hazardous wastes to more than $1,500 per cubic yard for mixed wastes.

Trench construction has been managed by Bechtel Hanford, Inc.; Rust Federal Services will provide waste disposal services.

* * *

Cleanup at Hanford's 100 Area Proves Cheaper than Estimates

Remediation of the Hanford site's 100 Area has begun, and results from field work indicate that cleanup estimates were too high. Estimators initially pegged remediation costs for the 37 waste sites in the area at $700 million; after excavating 20,000 cubic yards of soil, scientists realized that it was far less contaminated than expected. The final cleanup total will be around $100 million and possibly lower.

Workers have almost finished installing the geomembrane liner, part of a multi-barrier system to contain wastes stored in the environmental restoration disposal facility.

The site began the cleanup effort in July 1995, with the approval of an expedited response action. A record of decision was approved two months later. The Department of Energy's Richland Environmental Restoration Project, Environmental Protection Agency, and State of Washington Department of Ecology are formally partnering on the cleanup; this arrangement is proving instrumental in reducing volume estimates.

The soil was originally contaminated when liquid wastes from site reactors were disposed of in cribs and trenches; these reactors were subsequently deactivated. The soil will be excavated to achieve standards which protect human health, the environment, ground water, and the Columbia River. Excavated soil will be treated for volume reduction or waste consolidation if feasible; the site will then be backfilled with clean soil and replanted with native vegetation. Both the Environmental Protection Agency and the State will oversee efforts to ensure remediation standards are met.

For more information contact Linda McClain at 509-376-6628.

After cleaning up part of the 100 Area, the Department has reduced cleanup cost estimates from $700 million to $100 million.

HAMMERing Home the Need for Training

The Department of Energy, worker unions, academic institutions, Indian Tribes, and other Federal and State groups are teaming up to train their workers; these groups are constructing a hazardous material management and emergency response (HAMMER) training facility. When the Richland, WA, facility is completed in the fall of 1997, about 3,000 workers will demonstrate and learn about safety techniques every month. Workers currently are receiving training at a temporary facility.

For more information contact June Ollero at 509-376-8357.

Change *continued from page 1*

Progress toward summit commitments will be monitored, with results reported periodically to the EM Corporate Forum. The team hopes to have 1,800 DOE employee participants and increase productivity complex-wide 30 percent by October 1, 1996.

For more information contact Randy Harris at 301-903-8199.

Rocky Flats Round-up

Rocky Flats Donates Excess Chemicals to University

Chemistry graduate students at the University of Colorado will be using excess chemicals from the Rocky Flats site in their lab work. The site donated five sealed cylinders of Grignard reagents, including triethyl aluminum, methyl magnesium bromide, ethyl magnesium bromide, and butyl magnesium chloride. The chemicals had been stored at the site since 1983 and could not be returned to the manufacturer. Graduate students will use them to conduct cholesterol and cancer research.

For more information contact Jennifer Thompson at 303-966-6285.

* * *

Plutonium Located in Site Building

Workers at the site located between 2.4 and 7.2 pounds of plutonium in Building 779. Workers were beginning deactivation and decontamination of the building when they discovered plutonium in Glovebox 1363 in Room 154. Because the plutonium was located in the box filter, there was no release to the environment and consequently no increased health hazard.

Site managers are currently determining how to remove the plutonium; they expect that more will be found in the future as other facilities are deactivated.

For more information contact Jennifer Thompson at 303-966-6285.

Ryan's Pit Remediation Completed

Workers used a low temperature process to treat contaminated soil at a former chemical waste dump, commonly known as Ryan's Pit. The technology was used to treat approximately 180 cubic yards of soil.

The dump was excavated in September 1995. Soil was stored in large roll-off containers until the site could obtain permit approval. Treatment was finished in February 1996.

Soil was contaminated when 3,000 gallons of chemical wastes, primarily mineral spirits, trichloroethylene, toluene, and paint thinner, were disposed of in the pit between 1966 and 1970. The pit was subsequently named one of the top 10 hazardous sites at Rocky Flats and given priority cleanup status.

For more information contact Jennifer Thompson at 303-966-6285.

* * *

Site Finds Buyer for Oxnard Facility

The Greater Oxnard Economic Development Corporation has agreed to buy the Oxnard, CA, site from the Rocky Flats site; the final sale price will be released when all contracts with the private purchaser are signed.

For more than 10 years, the Oxnard facility produced high-precision forgings from stainless steel and other metals for Rocky Flats' defense programs. The facility, which has been declared excess to the Department of Energy's needs, consists of seven buildings on approximately 14 acres of land. Metalworking and laboratory equipment are also included in the sale.

For more information contact Patrick Etchart at 303-966-5993 or Gerry Campbell at 805-385-7444.

* * *

Rocky Flats Cuts Costs by Reducing Ground Water Sampling

The Rocky Flats site recently reduced annual costs for compliance-related sampling and analysis from $5.3 million to $1.6 million. This was accomplished by reducing the number of wells monitored from 300 to 152. Of this number, 89 will be monitored semi-annually and 63 quarterly, down from 120 and 180, respectively.

While most of the cost savings resulted from decreasing the number of wells sampled, analytical costs were cut by testing fewer samples for metals, reducing validation costs, taking fewer water-level measurements, and curtailing analysis for radiological contaminants in well-tested areas.

For more information contact Norma Castaneda at 303-966-4226.

Innovations at INEL

INEL Begins Removal of Hazardous Vapors

Vapor vacuum extraction, a process that removes vapors from soil and basalt rock, is being used at the Idaho National Engineering Laboratory (INEL) to remove volatile organic compounds from beneath its Radioactive Waste Management Complex.

Under a joint record of decision, the Department of Energy (DOE), Environmental Protection Agency (EPA), and State of Idaho agreed to use the process to remove vapors from the vadose zone to prevent them from further contaminating the Snake River Plain Aquifer. Organic vapors were released into the vadose zone when barrels of waste containing volatile organic compounds such as degreasers and solvents were buried at the complex. Over time, the barrels deteriorated and vapors migrated through the porous soil and basalt rock toward the aquifer.

The full-scale system consists of three treatment units that extract vapors from five wells; vapors are then treated with a state-of-the-art thermal oxidation process. Extraction began January 11, 1996, and will run between two and 10 years. The cost for the treatment will be approximately $2 million.

For more information contact Erik Simpson at 208-526-4700.

* * *

Capping Selected to Remediate Reactor Burial Grounds

Natural materials will be used to cap two reactor burial grounds, the Stationary Low-Power Reactor-1 and Boiling Water Reactor Experiment-1 at the laboratory. Other remediation actions include recontouring and grading area land to direct surface water runoff away; conducting periodic radiological surveys; inspecting and maintaining the caps; limiting access; and restricting industrial land use for a minimum of 100 years.

DOE, EPA, and the State of Idaho have signed the record of decision selecting capping as the preferred alternative. The project has entered the design phase; construction will begin in 1997.

For more information contact Erik Simpson.

* * *

Low-Level Waste Sent to Offsite Facility

January 31, 1996, marked the second shipment of low-level radioactive waste to the private treatment and disposal facility Envirocare of Utah, Inc. The first shipment, sent in September 1995, constituted about 10,000 pounds of waste; about 80,000 pounds were sent in January 1996. Envirocare has agreed to accept the waste for testing; the firm will encapsulate the waste in melted recycled plastic before disposing of it in an onsite landfill. The firm received a permit to use the macroencapsulation process in January 1996 from the State of Utah.

For more information contact Kathleen Whitaker at 208-526-1062.

* * *

DOE-Idaho Operations Seeks Bids to Build Treatment Facility

On January 11, 1996, DOE-Idaho issued a request for proposals; the winning bidder will build a privately-owned facility which will treat INEL mixed wastes. DOE has committed to signing a contract by June 1, 1997, and having the facility operational by March 31, 2003.

The contractor will be required to treat between 65,000 and 185,000 cubic meters of mixed (primarily alpha- and transuranic-contaminated) waste. The RFP will also evaluate the proposed treatment system's ability to treat other mixed waste streams from DOE sites in the region and across the nation. Treated waste must be reduced in volume 65 percent and be ready for disposal.

For more information contact Jan Chavez at 208-526-5968.

* * *

INEL Completes Several Mixed Waste Milestones Ahead of Schedule

INEL has beaten deadlines on three milestones established in the laboratory's site treatment plan and consent order. The plan established a three-year schedule the site must meet to establish compliance with mixed waste storage and treatment regulations.

The site beat a deadline of December 31, 1995, for submitting a schedule to dismantle and treat lead-shielded casks and devices at its Test Area North by several days. By the time the schedule was formalized, the project was already well underway. Workers are removing the lead lining from the casks for recycling. DOE's schedule outlines milestones for completing the project in the next five years.

The second milestone involved construction of the Sodium Process Facility at Argonne National Laboratory-West. Work began before the December 31, 1995, start date specified in the site treatment plan; systems testing and waste treatment will begin later in 1996. The facility will convert radioactive and nonradioactive sodium waste to dry sodium carbonate. The laboratory currently stores about 100,000 gallons of sodium waste onsite; waste which is converted into carbonate can be disposed of rather than stored.

Work on the third milestone, operating the Waste Experimental Reduction Facility, is approximately six months ahead of schedule. Incineration of mixed low-level waste at the plant, slated to begin in 1996, started in September 1995. The facility treats solid and liquid low-level and mixed low-level wastes.

For more information contact Kathleen Whitaker at 208-526-1062.

INEL *continued on page 11*

Breakthrough *continued from page 1*

it Council for Excellence in Government. And among the companies which opened up their doors to the Fellows was TRW Avionics, which had rescued difficult programs from the jaws of disaster by using an innovative problem-solving technique called "breakthrough management."

Wienand and Kerridge decided to champion the application of breakthrough management to Rocky Flats' wastewater problem. JRW Associates, a firm of breakthrough management experts, was brought in to train 25 federal and contractor employees on principles and techniques and facilitate the effort. By brainstorming creative changes in wastewater treatment and pipe rerouting, the group was able to minimize the amount of new equipment needed and identify $74 million in cost savings. When the changes are fully implemented in 1997, operation costs will be reduced by 50 percent; the project will save $7 million annually thereafter.

Breakthrough management uses comprehensive reasoning to sort out solutions. Participants use seven basic principles to think through problems, rather than taking a scientific or technical approach. The principles are:

1. **The Uniqueness Principle:** Regard each problem—and each part of the problem-solving process—as unique, at least initially. Don't try to clone another person's solution to another situation; often problems that seem similar are inherently different. In addition, the problem-solving techniques you have at your disposal now may be better than what your peers used last year or even last month.

2. **The Purpose Principle:** Be directed by your purpose, not the problem; place an issue in its larger context. Understanding an issue in its hierarchy will help you find its solution.

3. **The Solution-After-Next Principle:** Make sure the change you implement now considers future issues. Thinking about a problem's future implications propels your thinking beyond obvious first solutions.

4. **The Systems Principle:** Remember that problems don't exist in isolation. Each problem is intertwined with others, and a carefully-crafted solution may help fix other problems as well as your own.

5. **The Limited Information Collection Principle:** Limit the amount of information you know about a problem; don't feel compelled to collect all the information and review all the studies before you start problem-solving. There's no such thing as "hard data"; even experts draw conclusions from incomplete facts. Moreover, you'll keep yourself from being overwhelmed by information. Then, as you hammer out possible solutions, add useful data that helps you refine a final solution.

6. **The People Principle:** Involve people who are knowledgeable about and affected by the problem in decision-making. Diverse groups of people will seek different and often unorthodox answers. They may disagree, but they will bring focus to the effort

7. **The Betterment Principle:** Fix something that *isn't* broken. Solutions must be continually maintained and upgraded to stay effective. Because goals shift and change, no solution will ever be final.

Rocky Flats staff plan to apply breakthrough management principles to other difficult issues such as special nuclear materials. And as the EM Fellows continue to learn and implement their new reasoning skills, breakthrough management will undoubtedly impact the Department complex-wide.

For more information on breakthrough management, contact an EM Fellow in your organization or read a book on the subject. *Breakthrough Thinking* and *Creative Solution Finding* are written by Gerald Nadler, Ph.D. and Shozo Hibino, Ph.D. and published by Prima Publishing.

DOE Studies Ground Water at Tuba City Site

A test program to reintroduce native plants to the Tuba City, AZ, site got its start in January 1996. The site, which suffers from windblown soil erosion, is being studied by the University of Arizona; the school has set up a greenhouse near the site's disposal cell. In addition, Jacobs Engineering Group, Inc., the technical assistance contractor for the Uranium Mill Tailings Remedial Action Project, has installed a series of wells in the area. Workers installed a clean water well, 17 monitoring wells, and four extraction wells. The clean water well will supply water for the university's vegetation program, while the monitoring wells will be used to evaluate shallow ground water at the site. The extraction wells will be used to remove contaminated ground water and pump it into holding ponds for treatment before the water's return to the soil. The Department of Energy also plans to conduct pumping tests to study the area aquifer.

Surface remedial action at the site was completed in May 1990. Compacted uranium tailings and other contaminated materials were placed in a specially-designed disposal cell.

For more information contact Sam Giammo at 505-880-2519.

Forging Frontiers

Argonne National Laboratory has just released *Frontiers*, the annual review of its research and outreach activities. This year's edition commemorates the laboratory's 50 years of service. To obtain a copy of the report, contact Catherine Foster at 708-252-5580.

West Valley Draft EIS Published

Five alternatives to cleanup radioactive wastes and facilities at the Western New York Nuclear Service Center are detailed in a draft environmental impact statement, recently released by the Department of Energy and the New York State Energy Research and Development Authority. The 3,340-acre site, which is owned by the State, is located in Ashford, NY. The two agencies will be seeking comments on the document during the six-month public review period which ends September 22, 1996.

The study considers the environmental impacts of remedial alternatives for the West Valley Demonstration Project which is concentrated on a 200-acre portion of the site. The alternatives range from no action, discontinuing operations and leaving the site as is, to achieving a complete cleanup that would allow unrestricted use of the property. Citizens can review the draft document at area libraries.

For more information contact John Chamberlain at 716-942-4610.

Credits

EM Progress is published quarterly. To learn more about the newsletter, or how to submit an article, please contact either Dave Simon or Holly Larson at the phone numbers listed below.

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And the New EM Motto Is...Nothing Yet

In the last issue of *EM Progress*, Principal Deputy Assistant Secretary Rich Guimond issued a call for mottoes which could serve as a credo for and key goal of the Environmental Management program. Responses have been less than brisk, but in keeping with the Department of Energy's desire to open more doors and seek input from fellow colleagues, the editors of *EM Progress* are extending the competition for another issue.

Initially we had hoped to publish a top three list in this issue; instead we will publish the full set of submissions in next quarter's issue. Readers will then be asked to vote on their favorite entries. In hopes of spurring our readers' motto-making proclivities, we have provided our submissions to-date:

- Baseline: For less than $100 billion in less than 10 million minutes
- EM: Responsible steward for the nuclear complex cleanup
- EM: Managing today's waste to create a safer tomorrow
- Two sites clean by 2018
- EM: Responsibly managing DOE's Cold War legacy for future generations
- Two sites at an end by 2010
- Half the risks by 2006
- Reducing waste to increase faith in a clean America.

Send submissions to Dave Simon at his e-mail address: <David.Simon@em.doe.gov>.

DOE Releases Final EIS on Foreign Research Reactor Spent Nuclear Fuel

The Department of Energy (DOE) and State Department recently released the final environmental impact statement on foreign research reactor spent nuclear fuel. The document, which is entitled "A Proposed Nuclear Weapons Nonproliferation Policy Concerning Spent Nuclear Fuel," outlines the provisions under which DOE will accept and manage fuel supplied to foreign countries for scientific research under the 1940s Atoms for Peace program. Specifically, the document calls for the following:

- Accepting up to 20 tons of fuel over a 13-year period
- Sending approximately 19 tons to the Savannah River site and one ton to the Idaho National Engineering Laboratory
- Accelerating the two sites' waste treatment and handling technology development programs
- Studying the use of reprocessing at the Savannah River Site should new technologies not become available by 2000
- Monitoring all spent fuel for health and safety risks; any hazardous fuel would be reprocessed and stabilized at the Savannah River Site.

For more information or to obtain a copy of the document, contact the Center for Environmental Management Information at 1-800-736-3282.

Two Technologies Improve Worker Safety

Two technologies sponsored by the Department of Energy's Office of Environmental Management's decontamination and decommissioning focus area are tackling the task of worker safety. The advanced worker protection system improves worker resistance to heat stress, while the remote operated vehicle with a carbon dioxide blasting system allows workers to operate remediation tools from afar. Both technologies were developed by Oceaneering Technologies.

The remote operated vehicle with carbon dioxide blasting system.

In conventional protective suits, workers can experience heat stress in as little as twenty minutes and require an hour to cool down. The protection system, which is a liquid air-based, self-contained breathing and cooling garment and apparatus, enables workers to stay on the job for up to two hours.

A backpack attached to the suit holds a vessel of liquid air, pressure regulator, and hose which passes air to the face mask. Workers don a full-body, liquid-cooling garment and choose a splash- or vapor-proof outer layer.

The remote vehicle is a six-wheeled unit that can be operated up to 300 feet away. The blasting system uses dry ice to remove surface contaminants from floors. Debris, contaminants, and blasting gases are vacuumed up by the workhead, filtered, and deposited in the system's drum.

The advanced worker protection system.

For more information contact Paul Hart at 304-285-4358.

Waste Management Wrap-up

Waste Management Program Realigns

The Environmental Management program's Office of Waste Management (WM) has reorganized into three cross-cutting offices and four operations-focused offices. The realignment is designed to move WM away from hierarchical and toward collegial methods of operation. The structure will also help WM focus on critical issues. Employees from WM's seven offices comprise 26 self-directed teams which focus on site, multi-site, and business management issues. Each team has developed a charter and a list of deliverables which are written into the performance standards. After the team completes its mission the team dissolves, and members join new teams to tackle different issues.

For more information contact Patty Bubar at 301-903-7130.

DOE Finalizes Site Treatment Plans

The Department of Energy (DOE) is concluding negotiations with State and Federal regulators on site treatment plans and consent orders for a final few sites. When negotiations are complete, 35 plans and orders covering 38 sites in 20 States will have been issued; this endeavor represented three years of collaboration between DOE, regulatory groups, and stakeholders.

Collectively, the plans identify onsite treatment for 95 percent of the Department's high-level, mixed-transuranic, and mixed low-level wastes. All high-level waste will be treated at the site where it is currently stored or generated. Defense mixed-transuranic waste will be treated as necessary to meet acceptance criteria for the Waste Isolation Pilot Plant in Carlsbad, NM. Seventy-three percent of mixed low-level waste will be treated onsite, while two percent will be treated out-of-state; about 25 percent does not yet have a specific location for treatment.

Sites can begin implementing their treatment plans. The first step is to prepare National Environmental Policy Act-required documentation. Sites which already have completed this documentation are ready to begin siting, designing,

Waste *continued on page 11*

Cost Estimating Tool Is Key to Reducing ER Costs

The Office of Environmental Restoration Contract Strategy Analytical Team, based at Department of Energy (DOE) Headquarters, is tackling the weighty and troublesome issue of cost estimating. Historically, the problem has been twofold: DOE operations offices lack a benchmark to evaluate environmental restoration costs; in addition, historical data on completed projects are not readily available for cost comparisons. Consequently, it is difficult for operations offices to evaluate and to validate contractor cost estimates.

To rectify this situation, the Headquarters-based team is surveying field sites on their cost estimating requirements; evaluating tools currently used; and encouraging field offices to adopt a complex-wide system for environmental restoration projects. The survey will establish a framework that will allow future users to conduct cost comparisons of similar activities nationwide.

The team will hold a workshop April 1-2, 1996, in Albuquerque, NM, to discuss adopting a complex-wide cost estimating, cost collection, and cost maintenance standard.

For more information contact Kin Chao at 301-903-2605 (e-mail: kin.chao@em.doe.gov).

INEL *continued from page 7*

Fuel Removed from Site's Chemical Processing Plant North Basin

Crews have completed transferring spent nuclear fuel from the Idaho Chemical Processing Plant's north water basin at Building 603 to Building 666, a more modern storage facility. The transfer was necessitated by an agreement signed by DOE, the State of Idaho, and the Navy.

More than 550 units have been moved, emptying the north basin and most of the middle one. After this undertaking is complete, workers will begin removing the south basin's 718 units; the entire effort must be finished by December 31, 2000.

In 1992 contractors identified long-standing corrosion problems in Building 603's water basins. In conjunction with the fuel removal project, workers also double-rigged more than 300 fuel storage yokes to halt the effects of corrosion. The facility, which had been constructed in the 1950s, was placed on DOE's list for priority attention.

For more information contact Nick Nichols at 208-526-1693 or e-mail him at <fnd@inel.gov>.

* * *

DOE Requests Extension for Pit 9 Milestones

DOE has requested a schedule extension to meet two milestones at INEL's Pit 9 buried waste cleanup project. The Department is seeking the extension from the State of Idaho and EPA to complete and submit the project's remedial design information and remedial action plan. The project's subcontractor, Lockheed Environmental Systems and Technologies, was unable to provide complete information because of extensive design changes.

The Pit 9 project uses an innovative contracting approach; DOE will only pay if the project is successful. The contractor must remove and treat up to 250,000 cubic feet of soil and wastes contaminated with transuranic and hazardous wastes disposed of between 1967 and 1969.

For more information contact Brad Bugger at 208-526-0833.

Waste *continued from page 10*

constructing, and obtaining permits for new treatment facilities, while still others which already have existing and approved facilities can begin treatment.

Sites also will continue to streamline cleanup efforts and pursue commercial and privatized treatment where feasible. Changes to site treatment plans can be made during the annual update process established in the consent orders.

For more information on the Federal Facility Compliance Act, please contact the Center for Environmental Management Information at 1-800-736-3282 or access the Act bulletin board at <http://www.em.doe.gov/ffcab>.

DOE Holds Video Meetings on Draft PEIS

Between October 1995 and January 1996, DOE held 13 public hearings on the draft waste management programmatic environmental impact statement. The meetings, which were held by video conference, enabled the public to offer comments, ask questions, and discuss issues related to management alternatives proposed for treating, storing, and disposing of radioactive and hazardous waste. Over 800 people participated in the meetings.

For more information contact David Hoel at 202-586-3977.

Video Now Available

Find out what's happening in waste management by ordering the free video of the same name. "What's Happening in Waste Management" looks at the program responsible for minimizing, treating, storing, and disposing of Departmental waste.

More than two million people have viewed the video since fall 1994. It has been shown at more than 200 schools, colleges, and media centers; it was aired on public cable television stations. To obtain a copy, contact the Center for Environmental Management Information at 1-800-736-3282.

Riding the Information Highway

Clinch River...Now Appearing on Television Screens Everywhere

The Oak Ridge Clinch River Environmental Restoration Program's home page recently made a guest appearance on television. Discover Communications, Inc., parent company to the Discovery Channel and Learning Channel featured the home page in its segment "Mapmaker, Mapmaker, Make Me a Map." The show discussed how maps and geographic information systems are used to retrieve and analyze information. Internet users can access the home page at <http://www.esd.ornl.gov/programs/crerp>.

For more information contact Mildred Ferre at 423-576-8018 or Clayton Gist at 423-576-6821.

Dialing for Documents

Stakeholders now can access the Los Alamos Area Office's decisional documents via modem. All draft environmental assessments and other materials are available on the office's home page. Users can also ask questions or leave comments for the office's public involvement staff. The address is <http://bayberry.lanl.gov/doe_laao.html>.

For more information contact Gregory Sahd at 505-665-5025.

EM PROGRESS

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Look for the Summer 1996 issue of *EM Progress* to be distributed in mid-July!

EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 4 • Number 5 Fall 1995

"Critical Few" Measures Provide New Guidance to EM Program

Success of the Environmental Management (EM) program is integrally tied to being able to measure what has or has not been accomplished. Setting realistic, challenging goals is extremely important. Measuring how well these goals have been fulfilled is the next step in ensuring a program that is accountable to the American people. While Assistant Secretary Thomas Grumbly has established six strategic goals to focus the program, tools to measure progress are not nearly as available.

An effort is now underway to document EM's achievement record and share it with the American people. By communicating our efforts, we will be able not only to demonstrate our accomplishments, but also to justify our budget and show a commitment to the EM mission.

These measures are called the "Critical Few" and they will create accountability as EM reports its performance to Congress, other Federal agencies, States, stakeholders, and the general public. In addition to reporting the corporate health of the program, the Critical Few will align the organization around common goals and values; strengthen and demonstrate its accountability; focus on the truly important tasks; and better integrate EM's planning, budgeting, and performance measures.

The Critical Few at a Glance

- mission completion
- return on investment
- trust and confidence
- major milestones
- safety and health

What are the Critical Few? They are five key measures of EM performance that focus on "big-picture" outcomes related to mission completion, return on investment, trust and confidence, major milestones, and safety and health. These measures align the EM organizations around key results that are important to the public and essential to the accomplishment of our program's mission. Progress against the Critical Few measures will be assessed quarterly to provide tangible evidence that EM is working better and costing less (i.e., fiscal year goals will be measured against the Critical Few to stimulate action and demonstrate quantifiable improvements over time). The Critical Few measures will provide useful information for making educated management decisions within EM and for communicating our most important program results credibly and convincingly to Congress and the American people.

The idea for the Critical Few was born at a March Corporate Forum meeting with Council on Excellence in Government fellows. After studying a program at the private company TRW which aligned actions with performance, participants created the Critical Few concept. EM Fellows Fred Butterfield at Headquarters, Frank DiSanza from the Nevada Office, Henry DeGraca from the Oakland

Continued on page 8

New Technology Uses Infrared Spectrum to Analyze Solid Streams

An innovative new technology allows Department of Energy technicians to analyze waste process streams on-line. To conduct analyses previously, workers had to remove samples from the production line and dilute or thin them, a lengthy and involved process. John McClelland, a physicist at Ames Laboratory, has developed a new technology called Transient Infrared Spectroscopy (TIRS) which determines the molecular composition of a solid or viscous liquid process stream by capturing its mid-infrared spectrum while the materials are on the assembly line.

The mid-infrared light absorbed and emitted by a nearly transparent material lets scientists determine its molecular composition. Unfortunately, this informa-

Continued on page 10

In This Issue...

Critical Few Measures Address EM Performance 1

Expedited Site Characterization at Pantex 2

DOE Sites Celebrate Their Successes 4-6

Risk Report Analyzes Conditions at DOE Sites 9

Printed with soy ink on recycled paper

Argonne's Expedited Site Characterization Accelerates Groundwater Cleanup at Pantex

Since 1989 Argonne National Laboratory's Expedited Site Characterization (ESC) has been applied widely and successfully to contaminated sites owned by the Department of Agriculture. Under the sponsorship of the Environmental Management program's Office of Science and Technology and Office of Environmental Restoration, Argonne has used the ESC approach to characterize groundwater contamination in the perched aquifer beneath the Department of Energy's (DOE) Pantex Plant. This plant near Amarillo, TX formerly assembled and now disassembles the nation's nuclear weapons.

ESC is a methodology. It is a set of steps and good characterization practices for conducting Comprehensive Environmental Response, Compensation, and Liability Act remedial investigations and Resource Conservation and Recovery Act facility investigations. ESC combines the best innovative characterization technologies with standard soil and groundwater sampling to arrive at a deeper understanding of site hydrogeology and contamination. During an ESC investigation, a team of senior environmental professionals converges on a site. Non-invasive measurements, like electromagnetic and geophysical surveys, precede invasive techniques, like soil borings or well installations. Team members analyze data and immediately integrate results into field work. The team also develops a conceptual model of the site to predict measurements formally. Analysis ensures the plan stays within regulator-approved bounds. The result is a fast, cost-efficient, and scientifically thorough investigation that focuses on those issues critical to DOE and its stakeholders.

Using ESC, Argonne determined that the Pantex perched aquifer was an ancient river channel with banks that divide it into near-independent regions. This understanding will enable DOE to focus its remediation efforts on the most serious contamination first.

Pantex site characterization will be completed this year, more than a year ahead of the original planned completion date. An independent cost effectiveness analysis by Los Alamos National Laboratory found that the Pantex ESC investigation cost approximately 70% less than a conventional site characterization. Regulators from the Environmental Protection Agency Region VI and the Texas Natural Resources Conservation Commission praised the ESC process, results, and speed. Argonne's success predicting measurement results particularly impressed these groups. The successful ESC will enable DOE to begin remedial action at Pantex this year, much earlier than planned.

For more information contact Jackie Burton at 708-252-8795.

Argonne ESC Project Manager Tim Meyer (left) and Geologist Richard Gibson (center) examine soils recovered by sonic drilling at the Pantex Plant. Driller Doyle Littrel of Water Development Corporation is in the background.

Perspectives

This page usually features a guest editorial as part of the newsletter's regular series of guest editorials, "Perspectives." This feature allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Dave Simon, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585; 202-586-4253, Fax: 202-586-0293.

Former Rocky Flats Equipment Has an Educational Future

Production equipment once used in parts production at the Rocky Flats Environmental Technology Site will help to train technical students at the Rocky Mountain Manufacturing Academy. A thread grinder, electron beam welder, slant-bed lathes, and a five-axis horizontal mill are among the items to be sent to the school.

The Academy, part of the Colorado Community College and Occupational Educational System, requested the equipment for its manufacturing training program. Students throughout the community college system will be able to use the equipment to learn manufacturing skills.

For more information contact Jennifer Thompson at 303-966-6285.

Rocky Flats and Community Come Together on Future Use of Site Land

The future of undeveloped site land served as the subject of debate for the Rocky Flats Future Site Use Working Group this past year. Local government representatives, business leaders, activists, site workers, and landowners met regularly and held public forums to hammer out acceptable options for long-term future use of 6,100 acres of site land. The Working Group studied many issues, including current use of site and surrounding land, cleanup and waste management implications, technical feasibility, public health and safety, public acceptance, ecological considerations, legal issues, market forces, suitability, and cost. Technical and financial constraints proved to be major variables, influencing cleanup levels site workers would be able to achieve.

Initially, members advocated a range of options: maintaining the land as open space, mining, and commercial development. After much study, however, members unanimously agreed to preserve large areas of the land as open space. Representatives from the Rocky Flats Field Office, Environmental Protection Agency, and Colorado Department of Public Health and Environment attended meetings as non-voting members to provide technical expertise. While these agencies will design cleanup plans, the Department of Energy has the final word on land use; it has pledged to take into account Working Group recommendations.

For more information contact Patrick Etchart at 303-966-7547.

FSMP Program Reduces Cost of Environmental Data

Acquiring environmental data is a costly enterprise. The Department of Energy has estimated that it will spend $15 billion over the next 30 years on analytical services for site characterization alone. To maximize program dollars, the Environmental Management (EM) program has initiated the Field Sample Management Program. EM's Analytical Services Division runs the program, which seeks to streamline costs and improve the efficiency of EM's characterization efforts. To that end, the program is helping several sites select and contract with analytical laboratories for site projects; verify that samples are screened for radionuclides, packaged, and shipped properly; and track numbers, types, and costs of sample analyses and laboratory turnaround times. At other sites the program is responsible for overseeing project planning, quality assurance, data verification, and data management.

At the Savannah River Site the program helped stakeholders determine the fate of the 320-M lab. With changes in customer needs, workloads had dwindled and unit costs increased at the lab. After analyzing site sample types, volumes, and unit costs, program officials and stakeholders concluded that about a third of the work could be turned over to commercial laboratories using existing subcontracts; 15% of the work determined to be unnecessary could be eliminated; and the remaining analyses, which required limited space and manpower, could be transferred to the large central lab. In addition, 10% of the overall workload could be eliminated by using a prepaid kit for a routine analysis the lab performed. By closing the 320-M lab, the site will save $500,000 in analytical services costs.

Implementing the program has helped other sites realize savings as well. The Albuquerque Operations Office has saved $4 million by improving handling of large-volume analytical services, sharing audit results, and using joint lab audits. By strengthening lab interfaces, avoiding non-compliance fines, implementing new technology, sharing audit results, and improving the lab approval process, the Idaho National Engineering Laboratory saved $0.8 million. And Oak Ridge's creation of an Analytical Project Office and management and operations pricing agreement and implementation of a new automated analytical business system, TRACKER, has resulted in savings of $6 million. Complex-wide, participating sites have saved more than $15 million.

For more information contact Robert Murray at 301-903-7644.

Site Success Stories...Site Success Stories...Site

UMTRA UPDATES

UMTRA Completes Cleanup of Ambrosia Lake

State and federal officials gathered at a June 22nd ceremony celebrating cleanup completion at the Ambrosia Lake Site near Grants, NM. New Mexico Lieutenant Governor Walter Bradley was on hand to give the keynote address. The site is the 15th to be remediated by the Department of Energy's (DOE) Uranium Mill Tailings Remedial Action (UMTRA) Project. DOE and the State of New Mexico partnered on the cleanup effort.

Site cleanup began in 1987 but stopped in 1990 because of funding constraints. In 1992 additional funding was approved and construction resumed. The Jacobs Engineering Group, Inc. provided technical, engineering, and management support services and conducted site characterization. The M-K Ferguson Company managed the actual cleanup and cell construction. The cost of the cleanup was approximately $37.3 million.

New Mexico Lieutenant Governor Walter Bradley (center) gathers with (left to right) Rich Sena, Acting Director of DOE's Environmental Restoration Division; Ralph Lightner, Director of DOE's Office of Southwestern Area Programs; Chuck Cormier, former UMTRA Project Manager; and Steve Hamp, UMTRA Project Team Leader.

Workers removed contaminated soil, mill-site rubble, windblown radioactive material, and 2.14 million cubic yards of tailings from the site. The contaminated materials were placed in an engineered disposal cell and covered with a 2.5 foot-thick radon barrier, a layer of bedding rock, and a final layer of rock to prevent cell erosion. More than five million cubic yards of materials were placed in the cell which is designed to last between 200 and 1,000 years. The cleanup area encompassed more than 500 acres.

DOE will monitor the site under its long-term care program for completed disposal sites. The disposal cell will be licensed by the Nuclear Regulatory Commission.

UMTRA Begins Design of Disposal Cell for Use in Naturita, CO

Engineers have begun work on a uranium mill tailings disposal cell for the Naturita, CO UMTRA site. Design work should be completed early this fall.

Materials will be disposed of on property currently owned by Umetco in Uravan, CO. The engineered disposal cell will stabilize and isolate residual radioactive materials for 200 to 1,000 years. Currently the materials are housed at the former Vanadium Corporation of America mill site north of Naturita.

In related news, DOE awarded a contract for improvements on County Road EE 22. This road will be part of the route used to transport radioactive materials from Naturita to Uravan. Construction, which

Continued on page 9

Pinellas Plant Completes Investigation of 15 Solid Waste Management Units

Fifteen solid waste management units were investigated for possible contaminant releases at the Pinellas Plant in Largo, FL. Between April 1990 and June 1992, the Department of Energy (DOE), under the direction of the Albuquerque Operations Office Environmental Restoration program and the Pinellas Area Office, conducted a Resource Conservation and Recovery Act facility investigation at the plant. DOE conducted aquifer tests, hydrocone groundwater surveys, geotechnical tests, geophysical surveys, and soil gas surveys.

DOE workers drew approximately 400 surface water, sediment, soil, and groundwater samples in eight rounds of sampling from 52 monitoring wells installed in the units. The purpose of the testing was to determine the nature and extent of possible contamination and whether contaminants might spread beyond the plant. Additional sampling at several units was performed in response to concerns expressed by the Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection.

The investigation report, approved by the EPA in March 1993, revealed that 11 of the 15 units pose no current or future threat to public health. The report recommended no additional action be taken at these sites. DOE presented the report's recommendation at a public meeting in April 1994; EPA approval of the permit modification to formalize the recommendation is pending.

Continued on page 5

Site Success Stories...Site Success Stories...Site

Pinellas Plant *continued from page 4*

Tests detected contamination at the remaining four units. At one site, the Former Pistol Range, lead was detected in surface soils. Workers have excavated, transported, stabilized, and disposed of the lead-contaminated soil off-site at an EPA-permitted landfill. Subsequent soil sampling has verified that all lead contamination was removed; consequently, the Former Pistol Range will require no further action.

At the other three units (the Northeast Site, Old Drum Storage Area, and Building 100-Industrial Drain Leaks) investigators found groundwater contamination exceeded Federal and State protection standards. DOE determined that corrective measures were necessary to protect human health and the environment. Two corrective measures studies were performed at the three units; the Old Drum Storage Site and Building 100-Industrial Drain Leaks were combined under one study because of their proximity and similar contamination problems. The other study was conducted at the Northeast Site. DOE published two reports on the studies which have been approved by EPA and the Florida Department of Environmental Protection. DOE is currently preparing a statement of basis which details cleanup solutions. DOE will implement corrective measures after the public has commented on the statement of basis and EPA has issued a permit modification.

The investigation report was the first to be approved by EPA Region IV for a DOE facility, an important accomplishment for the plant.

For more information contact Jocelyn Buckley at 505-845-4215.

Battelle Laboratories Completes Decontamination of Building

Willis Bixby (left), Deputy Assistant Secretary for DOE's Office of Nuclear Materials and Facility Stabilization and Thomas Baillieul, Environmental Scientist at DOE's on-site project office, study the exhibit.

Successful decontamination of a Battelle Laboratories building was the subject of a pictorial display exhibited on-site and at the Department of Energy's (DOE) Forrestal Building. For two weeks in July, the Chicago Operations Office and Battelle exhibited a display at DOE Headquarters of the decontamination process at its King Avenue, Building 3, one of 15 buildings contaminated during the site's decades-long atomic energy research effort.

The building was decontaminated on a no-fee, cost-shared basis; DOE paid 90 percent of the cost. Workers completed cleanup in September 1994; in April 1995 a contractor independently verified that the building could be released without radiological restrictions.

For more information contact James W. Thomas at 614-424-3990.

Pinellas Plant Performs Corrective Study

Department of Energy (DOE) workers detected vinyl chloride contamination near the western border of the Pinellas Plant during routine groundwater monitoring in March 1992. Vinyl chloride levels were measured at four micrograms per liter in one perimeter well and 18 micrograms per liter in another, both of which exceeded State standards. The DOE Pinellas Area Office notified the Environmental Protection Agency (EPA) that the West Fenceline Area had been identified as a potential solid waste management unit in accordance with regulatory requirements.

DOE performed a facility assessment of the area in June and July 1992. Workers sampled the two perimeter wells at two different depths and performed a hydrocone survey. Workers identified a shallow vinyl chloride plume, approximately 150 by 225 feet in diameter, and discovered that contamination had migrated off plant property.

The facility assessment report concluded that the West Fenceline Area was a solid waste management unit which required further action to protect human health and the environment. EPA approved the report in August 1993.

Because the assessment was so thorough, it satisfied the requirements of the Resource Conservation and Recovery Act facility investigation, normally the next step. This enabled DOE to begin a corrective measures study, saving considerable time and expense. EPA approved the corrective measures study plan in December 1993.

For more information contact Jocelyn Buckley at 505-845-4215.

Site Success Stories...Site Success Stories...Site

ROCKY FLATS WRAP-UP

Low-level Mixed Waste Shipment Is the Site's Largest in Years

The Rocky Flats Environmental Technology Site shipped three truckloads of low-level mixed waste in late July to Envirocare of Utah, Inc., a commercial waste disposal facility. The 249 drums of environmental filtering waste contained trace amounts of radioactive and hazardous contamination. This shipment was the largest of its kind in five years. In September the site made an even larger mixed waste shipment, sending 14 truckloads of saltcrete to Envirocare for disposal.

Corporation Develops New Technology to Treat Water

The General Environmental Corporation has developed a new technology to remove radioactive metals from water. The technology, called CURE electrocoagulation, uses electricity to remove contaminants like heavy metals from wastewater and groundwater. The technology is being demonstrated on a pilot basis and may provide a way to reduce the levels of americium, uranium, and plutonium in Rocky Flats' solar evaporation pond water, currently being stored in site tanks.

This technology was developed under the Environmental Protection Agency's Superfund Innovative Technology Evaluation Program. Corporations which develop new treatment technologies to clean up Superfund sites can submit proposals to this program.

Site Refits Waste Drums with New Lids

Site technicians have refitted more than 2,045 older radioactive waste storage drums with new filtered lids at the Rocky Flats site. As radioactive waste breaks down plastics and other organic materials in the drums, oxygen, nitrogen, and hydrogen gases are generated. Refitting drum lids will prevent the hydrogen gas from becoming flammable and will meet shipping and disposal requirements.

Before being opened, the drums were moved to the Building 776 Size Reduction Vault airlock. Technicians opened the drums in the sealed area to release gases and then installed the filtered vent attachments. The vents allow the gases to escape, but trap radiation inside the drums. Technicians will service approximately 1,000 more drums by the end of September 1996.

For more information contact Jennifer Thompson at 303-966-6285.

Progress at the Hanford Site

The Hanford Site has made considerable strides toward achieving its cleanup goals. Here are some of the site's recent accomplishments:

- Construction will be finished by the year's end on a transfer line to move waste from the 200 West Area to the 200 East Area.
- A plant furnace, operating at temperatures of more than 1,000°, is converting liquid plutonium nitrate into solids, reducing worker radiation exposure by 25%.
- The International Atomic Energy Agency has accepted one metric ton of the site's weapons-grade plutonium.
- Workers are moving 2,100 metric tons of spent fuel from the K Basins to the 200 Area.
- Construction on the Hazardous Materials Management Emergency Response Facility will be completed in 1997; the facility will train emergency workers from around the nation on safe cleanup and firefighting techniques.
- Workers have demolished the 190-D Pump House and 195-D Vertical Safety Road Tower in the 100 Area.
- Thirteen of the N Reactor's support buildings have been deactivated; completion of the remaining 19 is planned for next year.
- By selling nitric acid from the Plutonium and Uranium Extraction Plant to British Nuclear Fuels, the site will avoid $40 million in disposal costs.
- Workers have finished recovering spent fuel elements from canyon dissolver cells.
- Defueling of the Fast Flux Test Facility, a test reactor, has been completed 4 1/2 months ahead of schedule and $475,000 under budget.
- Construction has been completed on the 200 Area and 300 Area Treated Effluent Disposal Facilities.
- The 222-S and 325 Laboratories at the T Plant have been refurbished with upgraded monitoring systems to comply with federal regulations.
- The site is undertaking Expedited Response Actions at Hexon Drum Burial Grounds, North Slope, Riverland Rail Wash Pit, Sodium Dichromate Disposal Site, White Bluffs Fielding Acid Crib, and Process Trenches.
- Construction of the Environmental Restoration Disposal Facility will be finished by July 1996.
- The site has submitted operating permits for the Waste Sampling and Characterization Facility to the Washington Department of Ecology.

For more information contact Keith Taylor at 509-376-2282.

CQMA Program Improves EM's Cost Management Practices

Concerned about the cost-effectiveness of environmental activities, the Environmental Management (EM) program has instituted several far-reaching cost management initiatives. Chief among these efforts is the Cost Quality Management Assessment (CQMA) program, established in 1991 by EM's Office of Engineering and Cost Management. The program was created to study how EM organizations and contractors handle indirect costs, cost- and schedule-estimating, cost analysis, and project management.

The first step was to develop standards to measure the effectiveness of cost management practices. The CQMA team developed performance objectives and criteria (POCs) which were used at Department of Energy (DOE) sites nationwide. Next, several teams conducted two rounds of independent assessments at 12 sites. In the first round, team members measured site performance against POCs and established a qualitative baseline. Sites responded with action plans, outlining steps to achieve cost-management goals. In the second round, team members evaluated site improvement.

After both rounds of CQMAs, sites demonstrated measurable improvement in cost management performance and cost- and schedule-estimating. Some of these changes were:

- *Cost- and schedule-estimating process*: All sites improved their estimating procedures. During Round I, four sites had no central estimating group (CEG); of the six sites that did have a CEG, none used it as the primary estimator for EM activities. By the second round, all sites had created a CEG and three had given their groups primary responsibility for all EM estimation functions.

- *Management practices*: During Round I, two sites had no automated control systems at all; only two had systems that met all POCs. By the second round, all sites had such systems, five of which met all applicable POCs.

- *Technical factors*: Five years ago, only three sites conducted technology risk assessments; now nine do. During Round I, five sites did not address health and safety considerations in the estimates, and only one site did so consistently. Now all sites consider health and safety requirements, eight of them consistently.

- *Policies, procedures, and guidelines*: Many sites have drafted and employed new cost management procedures which comply with DOE and other Federal policies.

- *Indirect costs*: Round I revealed that site managers were not monitoring indirect costs adequately. Consequently, Assistant Secretary Thomas Grumbly served as team leader for the Indirect Cost Review Team during DOE's Contract Reform Initiative.

- *Cost Estimating*: Team members conducted independent cost reviews during both rounds of CQMAs. In the first round, the variance between site and team estimates averaged 60%; by the second round, the variance had dropped to less than 20%.

For more information contact Vincent Fayne at 202-586-0126.

CQMA Program Goals

- Create a baseline of cost-estimating and cost-management performance
- Recognize EM successes and identify opportunities for improvement
- Recommend improved procedures and methods for the EM complex
- Highlight progress toward improved cost-effective performance
- Conduct independent reviews of cost-estimating process, methodology, supporting systems, and tools

EM Studies Performance Indexing to Enhance Worker Safety and Health

In an effort to improve worker health and safety, the Environmental Management (EM) program created the Performance Indexing System, based on a program developed by the Kodak Company. Performance indexing examines three types of indicators to unearth potential or ongoing problems. Leading indicators, such as unsafe acts or worn-down safety equipment, can contribute to worker accidents, injuries, and illnesses. Lagging indicators are factors such as lost work day rates and chemical exposures and uptakes. And finally, behavior indicators measure managerial and organizational culture and commitment to improving worker safety and health.

Over the next few months, EM will implement the performance indexing program at its major facilities. A two-volume report, *Environmental Management Worker Safety* and *Health Performance Indexing Program* (June 1995) describes the program in more detail. To obtain the report, contact: National Technical Information Service, U.S. Department of Commerce, 5825 Port Royal, Springfield, VA 22161; 703-487-4269. For more information about the program, contact Brendan Burns at 301-903-7483.

Critical Few *continued from page 1*

Office, John Evett from the Albuquerque Office, and Ned Larson, Don Beck, and Rob Muller from Headquarters accomplished much of the work. Jessica Arcidiacono, one of next year's fellows; Karl Stoeckle; Steve Einan; and Brendan Burns, all from Headquarters also provided invaluable support.

Assistant Secretary Grumbly has endorsed the concept of the Critical Few and will hold the Deputy Assistant Secretaries responsible for implementing the measures by October 1. He will use briefings, speeches, and other public appearances to emphasize EM's increased commitment to accountability.

Gail Pesyna, EM's Deputy Assistant Secretary for Management and Finance, has helped champion and sponsor this initiative. She says that one of the primary reasons for creating the Critical Few is to create a series of "bottom-line" measurements for the program like those the private sector uses. Most private sector companies, she says, can immediately identify five or six key financial measures; these standards are easy to calculate because of the companies' bottom line. "We don't have a bottom line, so it is difficult to construct. This is our attempt to construct comparable measures," she says.

How will this work? A mathematical example will help make the measurements clear. For example, for mission completion in the Office of Environmental Restoration (ER), the formula would be as follows: the number of completed ER release sites and facilities divided by the total number of such facilities. In real numbers, that would be 1,694 divided by 8,185, or a 20.7% completion rate.

Pesyna says the Critical Few must be meshed with other performance measures to develop a coherent whole, more so than is currently the case in the program. She sees "measurements now because they're measurable. We need to focus on our customers, the American people. Once we've identified the measures important to them, we can move to eliminate the non-applicable ones. Hopefully, the measures will also be a powerful communication tool with our customers, and will help hold us accountable."

At the agency level, the Critical Few must align with DOE's Strategic Plan. In addition, the commitments in the Secretary's Performance Agreement with the President for 1996 should include selected measures.

At the EM level, the Critical Few directly support the program's long-range vision, mission, and six strategic goals. The measures will be linked to strategic objectives and incorporated into the revised EM Strategic Plan for 1996. The Annual Performance Plan for FY 1996 will be revised in November to reflect Critical Few measures and related fiscal year targets, as appropriate. Because the Office of Management and Budget requires most of the program budget to be covered by performance measures, a few Plan measures will not link directly to a Critical Few measure.

Key DOE and EM reporting processes and documents will incorporate Critical Few measures to demonstrate continual progress and improvements to EM employees and managers and the American public. Sites and contractors will report against the measures to EM headquarters. At the EM level, reporting against the Critical Few measures will occur annually and quarterly. Officials will accomplish annual reporting using the EM Annual Performance Report.

The measures are intended to align the EM organization, from the corporate level down to the individual employee, around common goals and values. The measures emphasize managing the program for results—and then demonstrating them. This will require changing our existing management culture as we shift our focus from managing inputs (i.e., resources and dollars) to managing outputs and outcomes.

The Critical Few are not intended to be simply "add-on" milestones that supplement existing measures and processes, nor are they intended to replace measures critical to accomplishing program management. However, existing measures and measurement processes will be reexamined to streamline or reengineer some of the current requirements. As the Critical Few become an integral, integrated part of EM's performance management system, some existing measures may become outmoded.

A videoconference and briefing for Assistant Secretary Grumbly will help roll out the program. Deputy Assistant Secretaries are currently setting goals for fiscal year 1996. The program will begin establishing goals October 1, adding later arrivals by the end of next year's first quarter, Pesyna says.

For more information contact Dave Simon at 202-586-4253.

CEMI Update

More than 2,200 people call the Center for Environmental Management Information (CEMI) every month, requesting publications or information related to the Department of Energy's (DOE) Environmental Management program. Callers request information on the following topics, ranked by frequency of requests: the Advisory Committee for External Regulation of DOE Nuclear Safety, general information, environmental management activities, technology development, program history, public accountability, waste management, environmental justice, spent nuclear fuel, environmental restoration, education, and other issues.

For more information contact CEMI at 1-800-736-3282.

EM's Draft Risk Report: A "First Step" for Cleanup Program

The Environmental Management (EM) program continues with national deliberations on the scope, schedule, and cost of stabilizing and cleaning up the environmental damage left from the Cold War. As part of this process, EM's Office of Integrated Risk Management (OIRM) released a draft report entitled *Risk and the Risk Debate: Searching for Common Ground* (June 1995) that represents a first step toward consistent evaluation of the risks to human health, worker safety, and the environment posed by conditions at Department of Energy (DOE) sites and facilities. "It is one of several reports that together will provide a foundation of technical, environmental, financial, and social analysis needed" for the nation to proceed with this discussion, EM Assistant Secretary Thomas Grumbly said when releasing the report.

The Congressionally-required draft Risk Report provides a qualitative summary of risks to public and site personnel safety and health and environmental protection, as they relate to compliance, cost-effective risk management, and mission impact of EM activities. The report demonstrates that the majority of EM's budget addresses high and medium risks, as well as high compliance activities. "As a scorecard, this draft Report gives the Environmental Management program fairly good marks," Grumbly said.

The draft Risk Report achieves three things that "really haven't been done before," explained Dr. Carol J. Henry, OIRM's Science and Policy Director, who spearheaded the effort. First, it articulates an overarching approach to capturing the spectrum of risks associated with very diverse environmental management activities across the nuclear weapons complex. Second, it categorizes the risks addressed by the patchwork of regulations and compliance requirements that govern DOE's environmental management activities. Finally, it links the risks in a qualitative fashion to compliance and the budget. "As the first draft, it is not flawless," Henry emphasized, "and the process we used is being modified and refined as our many stakeholders, both internally and externally, review and comment."

At the beginning of September, about 1,800 copies of the draft Report had been distributed throughout the Executive Branch, Congress, DOE operations and field offices, and among a wide variety of stakeholders. By the time the formal comment period had closed August 17, at least 50 individuals and stakeholder groups had submitted more than 500 specific comments. "We expect these to be rich in perspective and anticipate they will help in enhancing the process," said Mark Gilbertson, OIRM's Program Director.

EMAB Endorses Process

The Environmental Management Advisory Board (EMAB) also reviewed the report and transmitted recommendations to DOE after an all-day meeting July 28 on DOE's qualitative risk evaluation process, the approach used by the team who developed the report. EMAB endorsed the process used as "an important first step in linking risk to compliance and budget information." The value of this "first step," EMAB said, "will be enhanced with improved data quality and consistent application and interpretation of those data." The bottom line: "This process should continue." Specifically, EMAB recommended improvement in four areas:

Quality of Information: First, DOE must identify assumptions used in gathering information; and develop accurate, credible, and consistent information and data through public and peer review, throughout the rating process. DOE should consider both internal and external approaches while developing systems to address these issues. Second, activities must be categorized across all sites consistently if this process is to become a valid decision-making tool.

Land Use: Assumptions on future land use can have a significant impact on estimates of risks to the public, workers, and the environment. DOE needs more specific criteria for this process.

Integration: The risk process should be linked to the budget process, long-term cost projections, future land use planning, and strong stakeholder involvement. DOE should better integrate risk issues with long-term cost projections and future use planning in budget and other decision making processes.

Stakeholder Involvement: Stakeholder involvement is linked to the quality of information and credibility of the process. DOE needs to use a variety of creative approaches to engage stakeholders meaningfully in this process. Better information and communication tools are needed.

And finally, EMAB emphasized that EM should place "a much higher priority on improving this process than on finalizing the draft Risk Report." As of mid-September, Henry and Gilbertson, along with members of the risk team, were in the process of implementing EMAB's recommendations and formulating responses to stakeholder comments. For more information contact OIRM at 1-800-451-6216 or use the Internet at http://www.em.doe.gov/irm.

UMTRA *continued from page 4*

includes constructing traffic barriers and installing a temporary bridge, will be completed by the year's end.

Workers are also cleaning up five private properties on site boundaries. The five properties are among 37 which have been identified for cleanup because of contamination by site materials.

For more information contact Melanie Majors at 505-880-2520.

Draft PEIS on Waste Management Is Released

The Department of Energy (DOE) recently released the draft *Waste Management Programmatic Environmental Impact Statement* (PEIS). DOE is soliciting public feedback on the document through mid-December.

The draft PEIS evaluates management alternatives for treating, storing, and disposing of radioactive and hazardous wastes over the next 20 years (40 years for high-level waste). Seventeen sites currently handle the majority of these wastes for DOE; the document studies options for consolidating waste operations or handling them at multiple sites.

DOE has identified preferred alternatives for managing three of the five waste types. They are:

- Implementing the "no action" alternative to treat non-wastewater hazardous waste. In this scenario, DOE would continue its current course of using commercial facilities to treat the waste. DOE facilities would treat hazardous wastewater.
- Choosing the "no action," decentralized, or regionalized alternatives to store high-level waste at three sites. Waste would be stored at the Hanford Site, Idaho National Engineering Laboratory, and Savannah River Site, until it could be disposed of in a geologic repository. A storage facility for high-level waste from the West Valley Demonstration Project has yet to be determined.
- Selecting the regionalized alternatives, which most closely approximate DOE's proposed plans, to handle low-level mixed waste treatment. DOE is currently negotiating treatment plans with regulatory officials; the result of these discussions may influence DOE's choice of a preferred alternative for these wastes.

Public meetings will be held from mid-October to mid-November. For more information contact the Center for Environmental Management Information at 1-800-736-3282.

EM Program Assures Quality in Handling and Processing Radioactive Wastes

Overcoming a self-imposed Stop Work Order in 1991, the Environmental Management (EM) program's quality assurance initiative has moved beyond Department of Energy (DOE) headquarters to provide quality oversight at other sites. EM's High-Level Waste (HLW)/Spent Nuclear Fuel (SNF) Quality Assurance program is responsible for radioactive waste handling and processing. Specifically, the program ensures that sites maintain quality while vitrifying HLW forms; and characterizing, packaging, and handling SNF owned by DOE. HLW and SNF must be prepared for disposal in a geologic repository.

Headquarters program officials are currently working with officials at the Savannah River Defense Waste Processing Facility and the West Valley Demonstration Project. By using teams which evaluate multiple site functions, the program has been able to reduce audit costs.

For more information contact Jim Conway at 301-903-7450.

Technology *continued from page 1*

tion is unattainable if the material is opaque; before TIRS, scientists had to remove samples from the line and thin them until they were nearly transparent before they analyze them. TIRS makes a material appear thin to the analysis instrument by cooling or heating the surface of the process stream. The nearly transparent surface layer, which absorbs and emits infrared independently of the rest of the process stream, can then be analyzed separately.

TIRS is being used at Brookhaven National Laboratory and at the Rocky Flats Environmental Technology Site in developing polymer-encapsulation waste treatment. Polymer encapsulation is a new technology that coats hazardous waste with polyethylene to immobilize and isolate the waste, making it safer. Scientists are using TIRS to monitor the effectiveness and safety of polymer encapsulation. With their new-found ability to do on-line analysis, they can make immediate improvements to this emerging technology.

For more information contact John McClelland at 515-294-7948 or Mark Bowman at 515-294-1405.

Community Working Group Recommends SSAB Be Formed at Paducah Plant

Ten area citizens with diverse backgrounds were selected by an independent public facilitator hired by the Department of Energy to form a Community Working Group for the Paducah Gaseous Diffusion Plant. The group includes three non-voting members who represent the Paducah site, the Environmental Protection Agency Region IV, and the Kentucky Department for Environmental Protection. The group has met four times this summer and has drafted a proposal to establish a Site-Specific Advisory Board (SSAB). The public is currently commenting on this proposal, which will be available in final form in October.

If created, the SSAB will deal with environmental management issues at the Paducah site. The Community Working Group will screen and select board members.

For more information contact Dennis Hill at 502-441-5099.

DOE To Implement Mixed Low-Level Waste Treatment Plans

The future of mixed low-level waste has been the topic of discussion for the public, regulatory agencies, and other stakeholders over the past six months. Between April and October, these groups have commented on treatment alternatives for the waste, which is generated and stored by the Department of Energy (DOE) at 40 sites in 20 States. In April DOE submitted plans to State and Environmental Protection Agency officials proposing to treat more than 76% of the mixed low-level waste at the site and 98.4% in the State where it is stored or generated.

Comments focused on ways to continue reducing costs, accelerate treatment schedules, and comply with State and Federal legislation. After compliance orders are issued in October, DOE will begin implementing the plans at sites across the nation.

For more information contact the Center for Environmental Management Information at 1-800-736-3282 or access the Federal Facility Compliance Act Bulletin Board via the Internet at http://www.em.doe.gov/ffcabb.

EM Publications

Two March releases are proving to be popular document requests at the Center for Environmental Management Information (CEMI). The *Baseline Environmental Management Report* estimates cleanup costs from the Cold War mortgage, while the draft *Environmental Impact Statement on the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel* (SNF) proposes a policy to handle SNF from research reactors abroad which meets United States' nuclear weapons nonproliferation goals. To request either document contact CEMI at 1-800-736-3282.

Unexploded Ordnance Items Removed from Tonopah Test Range

A one-armed mobile robot joined team members on a dangerous cleanup mission at Tonopah Test Range in central Nevada. Two contractors and a Federal laboratory teamed to clean up several thousand potentially "live" unexploded ordnance items from six disposal sites. The items were removed and detonated; nearly 100 detonations and several hundred pounds of explosives were used to demilitarize and vent bomb casings and other parts. Most of the metal was recycled; some soils were shipped off-site for treatment.

IT Corporation was the lead contractor for the remediation effort. The company provided a team of former military unexploded ordnance specialists, drum-crushing equipment, and an equipment operator, in addition to handling management, oversight, and documentation responsibilities. Reynolds Electrical and Engineering Co., Inc. provided radiation safety personnel, while Sandia National Laboratories contributed a radio-controlled, one-armed mobile robot. The Department of Energy's Nevada Environmental Restoration Division oversaw and funded the endeavor.

The prototype robot, which was mounted on an all-terrain vehicle, was used to collect submunitions, or bomblets, released from serial drops of cluster bombs. An operator worked the robot's radio-controlled manipulator arm via interactive video from a trailer more than 3,000 feet away.

During the five-month project, about 22,000 bomblets and 150 larger practice bombs and artillery shells were detonated and disposed of safely. Nearly 400 spent rocket motors were cut up as scrap and more than 120 tons of scrap steel and five tons of scrap aluminum were recycled. All six sites are free of ordnance and debris; three of the sites are ready for site characterization work, the other three require surface soil sampling to verify that contaminants have been removed.

For more information contact David Shafer at 301-903-3979.

Environmental Restoration Conference Held in Denver

More than 2,000 people from across the nation gathered in Denver, CO for *Environmental Remediation 1995*, the Department of Energy's (DOE) biennial conference. Being "Committed to Results" was the theme of this August 13-17 conference, sponsored by DOE's Office of Environmental Restoration and hosted by the DOE Rocky Flats Field Office.

DOE professionals, contractors, State and Federal regulators, and representatives from academia and industry assembled at the Colorado Convention Center to discuss environmental restoration efforts at DOE facilities and sites. The conference featured workshops, oral presentations, poster sessions, and tours of the Rocky Flats site and the Rocky Mountain Arsenal.

For more information contact Heathere Evans at 303-966-5026.

Lawrence Livermore Streamlines Regulatory Document Preparation

The Lawrence Livermore National Laboratory is streamlining and reducing the number of regulatory documents it submits for its Environmental Restoration program. Since 1990 the Laboratory has been preparing feasibility studies to meet Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requirements. The studies report on environmental investigations at two sites, the Laboratory's main site in Livermore and the Site 300 Experimental Test Site near Tracy, CA.

By adding comprehensive environmental assessment chapters, the Laboratory is able to use the feasibility studies to comply with National Environmental Policy Act (NEPA) requirements. The chapters discuss potential environmental impacts from all remedial alternatives evaluated for each operable unit. This has eliminated the need to produce separate environmental impact statements, saving the Laboratory substantial expense while preserving stakeholder involvement. To date, the Laboratory has produced five feasibility studies.

The Laboratory established libraries of CERCLA, NEPA, and other environmental documents in 1986 to involve stakeholders in environmental issues. The documents are housed in seven locations within a 20-mile radius of Laboratory facilities.

For more information contact Albert Lamarre at 510-422-0757.

EM PROGRESS

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Look for the Winter 1996 issue of EM Progress to be distributed in early January!

EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 4 • Number 4 Winter/Spring 1995

The Six Strategic Goals of the Environmental Management Program

- Eliminate and manage the urgent risks in our system
- Emphasize health and safety for our workers and the public
- Establish a system that is managerially and financially in control
- Demonstrate tangible results
- Focus technology development efforts on identifying and overcoming obstacles to progress
- Establish a stronger partnership between the Department of Energy and its stakeholders

Budget Constraints Spur Drive for Increased Efficiency, Require Balancing of Priorities

A Message From Assistant Secretary Thomas Grumbly

Changing the way the Department of Energy and the Environmental Management program do business has been an overriding theme in the way we've worked over the last two years. As we continue to meet that challenge under new budgetary constraints, we must strike a balance between the increased efficiency that budget cuts can facilitate, and the maintenance of safety and health priorities that budget cuts can impede. While the Environmental Management program is taking extraordinary steps to reduce costs, further cuts could hinder our ability to fulfill our responsibilities.

The recently announced Departmental reduction cut of $10.6 billion over the next 5 years, $4.4 billion of which will come from the Environmental Management program, is our share of the down payment for the Administration's proposed Middle Class Bill of Rights. In many ways, the budget news is not all bad. New constraints have prompted an acceleration of changes that were already identified as necessary — changes that bring us closer to achieving the six goals (see sidebar at left) against which we measure our progress daily; changes that will allow us to continue to improve the way we do business.

These changes are encompassed in the two-step reform strategy we've already undertaken to cut costs. First, we need to continue to improve our efficiency and productivity. Second, we need to work with the Environmental Protection Agency (EPA) and the States to seek changes to the regulatory structure that drives our program. These two elements are not newly inspired by the lower budget. They are needs that, having already been identified, simply have to be addressed sooner than we had previously thought. And both of these elements have to work in order for us to have a viable program within the constraints of the lower budget.

As we work toward our two-pronged reform strategy, we must understand, in the context of the new budget, why this strategy is necessary and what it will involve. Based on the old way of doing business, we estimated that meeting our compliance obligations between FY 1996 and FY 2000 would cost $46.4 billion. Over that same 5-year period, the new administration targets allocate $29.4 billion. Under our aggressive efficiency improvement program, we intend to do more for less and slash costs by over $9 billion. However, even as we achieve this $9 plus billion in savings, we're still pro-

Continued on page 3

HIGHLIGHTS...

Guest Editorial by Dr. Mildred McClain 2

EM Workforce Restructuring 3

Chicago Shortens Schedules and Reduces Costs 5

Liability Reduction Activity Teams at Rocky Flats 7

PEIS - Shifting Focus.....9

NEPA Efficiencies at East Fork Poplar Creek 10

Spent Fuel Update 11

Printed with soy ink on recycled paper

Perspectives... A continuing series of guest editorials

Guest Editorial by Dr. Mildred McClain, Executive Director, Citizens for Environmental Justice, Savannah, Georgia

The Department of Energy and Environmental Justice: A New Vision

Given the multitude of inequities people of color face, it is impossible to isolate and address one single issue, including health. In poverty-stricken, contaminated communities, citizens must be encouraged to look at their problems and concerns as a part of the comprehensive struggle for environmental justice. Agencies must join hands with people of color to help their communities overcome insurmountable odds and to defend them against any entity that would pollute, poison, and contaminate their neighborhoods.

People of color, environmental groups, and communities are fighting against toxic waste dumps, incinerators, and radiation exposure from DOE facilities. However, this struggle is a part of their overall struggle for social, political, and economic justice. The empowerment of these communities is essential to the public participation process now being promoted by DOE and other Federal agencies. The struggle that enables people of color to feed, clothe, house, educate, and protect their health is a part of the environmental justice agenda. Health research, surveys, and studies need to demonstrate that policy makers and agencies will not follow the historical pattern of disregarding communities of color.

Historically, people of color have been excluded from the nuclear weapons debate by both the DOE and anti-nuclear groups. While many of the nuclear weapons facilities are sited within communities of color, secrecy and the jobs blackmail factor have effectively excluded participation. The notion that people of color don't care about health or the environment is a clear misconception. The health of oneself and family is a primary consideration regardless of whether employed by DOE or living by those dangerous facilities.

Rural African Americans living and working at the Savannah River Site, Chicano farm workers, and Native Americans living and working at Hanford or Los Alamos National Laboratory all care about the health of their children and the threat to future generations. The health studies, Dose Reconstruction studies, public participation activities such as Site Specific Advisory Boards, and community partnerships being undertaken by the Department of Energy can only be effective and successful if inclusion and participation are primary goals in the process.

Recommendations:

- Learn the culture of each special stakeholder group.
- Use local-community based leadership for entry into the affected communities.
- Resist the temptation to do business as usual.
- Create real partnerships with people outside the "usual suspects."
- Develop creative outreach tools that are culturally specific and sensitive.
- Make resources available to community groups to help implement public participation initiatives.

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in EM Progress, contact Dave Simon, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-4253, fax (202) 586-0293.

EXTRA! EXTRA! The Baseline Environmental Management Report Is Here!!!

Read all about it in a special edition of *EM Progress* focussing on the Baseline Environmental Management Report, a.k.a. "BEMR." The report was mandated by Congress to provide an estimate of the cost of cleaning up the legacy of the cold war. Released on April 3, 1995, the BEMR includes the annual budget requirements to meet compliance commitments, descriptions of the required tasks, and projections of the total cumulative costs. Look for the *EM Progress* special BEMR edition to be distributed soon.

Budget Constraints *from page 1*

jecting a shortfall of over $7 billion between FY 1996 and FY 2000. To compensate for that shortfall, we need to work with the States, the Congress, EPA, and our other stakeholders in seeking greater regulatory flexibility.

Our strategy to increase efficiency is ambitious but achievable. We intend to achieve a 30-percent increase in productivity from FY 1994 to FY 2000, with an annual productivity increase of 1 percent thereafter. These productivity increases will be achieved through reductions in contractor employment, reductions in overhead costs and direct costs, more efficient practices such as privatization and contract reform, better management, and technology improvements. Already, increased productivity has resulted in over $2 billion in savings between FY 1994 and FY 1996. I look forward to continued improvements and cost savings that will help us close the budget gap.

The second step, regulatory reform, requires us to work together with EPA and the States to maintain our commitment to compliance within budget constraints. I want to make it clear that we will not compromise compliance requirements or the protection of human health, and that we intend to engage in a dialogue about how we can maximize our collective resources to ensure our obligations are met. We have invited EPA, the States, and other stakeholders to participate in our budget process to facilitate bottom-up prioritization of site-specific tasks, equitable allocation of resources among sites, and greater managerial flexibility. In return, we hope to restructure compliance agreements, when appropriate, to incorporate the results of these efforts. I am pleased that EPA and the States are optimistic about collaborating in these efforts.

We will continue to work hard to fulfill our responsibilities to the American taxpayer, to ensure health, safety, and environmental protection at the Department's sites across the country for as few tax dollars as possible. It is unfortunate that Congress has recently proposed rescinding $151 billion from the Department's FY 1995 environmental and safety budget. Such cuts could lead to serious consequences at many of our sites. Nevertheless, we will do the very best we can with the resources entrusted to us, and we will be honest and accurate with Congress and the public about what we can and cannot do.

The Department of Energy and the Environmental Management program are charged with handling some of the highest risks in the world today, and we're proud of our ability to keep those risks in check thanks to the many capable men and women in our program, and improving technologies. But our responsibilities are not without costs. We have a duty and a moral obligation to protect the safety of our workers and the communities near our sites, and that requires adequate funding.

Our program is not about politics. It's about the Federal Government's obligations to American citizens. We must spend tax money wisely and protect human health. There's a fine line between saving money by increasing efficiency and saving money by compromising the health of our families. We must not cross that line.

EM Gets Leaner Through Workforce Restructuring

Programs Provide Security Net in Contractor Reduction Plan

In a move to cut costs and increase productivity by streamlining Environmental Management operations, Assistant Secretary for Environmental Management Thomas Grumbly recently announced a comprehensive contractor workforce reduction plan. The plan includes workforce restructuring initiatives such as job retraining and extension of medical benefits.

Facing budget constraints and downsizing or elimination of nuclear defense programs, the Environmental Management program is making substantial reductions among its contractor employees by eliminating 8,000 positions to date and by considering proposals for future cuts. Reductions have already been announced at Rocky Flats, Hanford, Fernald, and the Idaho National Engineering Laboratory.

Workforce restructuring initiatives are a central part of the contractor workforce reduction plan, with voluntary separation incentives minimizing the effect of restructuring. The Environmental Management program will also work to assist communities by promoting economic development and diversification proposals that promote commercialization and attract private industry.

In reducing the workforce while working to minimize the social and economic impacts of those reductions, Grumbly said the Department "intends to proceed carefully and humanely." To this end, the Department is preparing restructuring plans with the involvement of workers and the local community. These plans describe the options, through "early-out" retirement packages, extension of medical benefits, tuition reimbursements for retraining, and assistance in job searching and relocating. These plans are both in concert with the Environmental Management program's commitment to displaced employees and in compliance with Section 3161 of the National Defense Authorization Act for 1993. In the plans developed thus far, fewer than 2 of every 10 employees have left involuntarily.

Continued on page 5

Hanford Accelerates Cleanup of Former Defense Plants

Environmental cleanup progress at the Hanford Site is accelerating, with several activities underway to deactivate two former defense production plants. The early deactivation of the Uranium Trioxide Plant and the planned early deactivation of the Plutonium Uranium Extraction Plant can save millions of dollars in maintenance and monitoring costs. The operation, encompassed under the Plutonium Uranium Extraction/Uranium Trioxide Deactivation Project, is funded by the Department's Environmental Management program.

Workers at the Uranium Trioxide Plant clean out residual uranium trioxide powder from the large furnace-like calciners that were used to convert liquid uranium to the solid oxide (powder).

Deactivation of the Uranium Trioxide Plant was completed in January 1995, 4 months ahead of schedule and at a savings of over $3 million. The timetable for deactivation of the Plutonium Uranium Extraction Plant has been reduced by 10 months, yielding an expected savings of $37.9 million. Deactivation is expected to reduce the yearly maintenance and monitoring costs of the two plants from $34 million to $1-2 million.

Deactivation of the Uranium Trioxide Plant began in June 1993. Residual materials were removed from the furnace-like calciners and flushed from tanks, transfer lines, pumps, and other process equipment. Outside surface contamination areas were cleaned up, and remaining process equipment was deactivated. Excess equipment and hazardous materials were removed, building penetrations sealed, heating and ventilating systems deactivated, and utilities turned off and isolated.

In January 1995, the Uranium Trioxide Plant was transferred from the operations contractor, Westinghouse Hanford Company, into the surplus facilities program managed by Bechtel Hanford, Inc. for long-term surveillance and maintenance prior to final facility disposition. The 30 workers at the plant were transferred to the Plutonium Uranium Extraction Plant to help accomplish early deactivation goals there.

Deactivation of the Plutonium Uranium Extraction Plant is also proceeding ahead of schedule. At an enormous length of 1,003 feet, the Plutonium Uranium Extraction Plant poses a major deactivation challenge, with radioactive and chemical contamination present throughout its process cells, piping, tanks, and other equipment.

The accelerated pace of deactivation at the Plutonium Uranium Extraction Plant is due largely to some innovative ideas developed by employees. For example, over 3 million pounds of excess chemicals were sold to industry rather than being disposed of as waste. An Environmental Assessment is underway on another plan to ship approximately 200,000 gallons of nitric acid solution containing uranium to a vendor in England who can use it as a product.

Innovations and cost-saving techniques, as well as lessons learned from the project, are being documented to share with other Department facilities to benefit future deactivation efforts. For more information on the Plutonium Uranium Extraction/Uranium Trioxide Deactivation Project, please contact Jean McKenna of the Westinghouse Hanford Company, Program Communications Services, at (509) 376-1113.

Editor's Note

We regret that a mistake occurred in an article titled, "Subsurface Wall Constructed to Contain Ground-Water Plume," that appeared in the Fall 1994 issue of *EM Progress*. The article incorrectly stated that "nearby residential water wells have already been affected" by ground-water contamination migrating outside the Portsmouth Gaseous Diffusion Plant site. This was an error. The article should have stated that nearby residential water wells have not been affected. It has been demonstrated through several investigations that ground-water contamination described in the subject article is limited to the Portsmouth Gaseous Diffusion Plant site and has not migrated offsite. For further information, contact Sandy Childers at (614) 947-1583.

Chicago Shortens Schedules and Reduces Costs

The Chicago Operations Office is taking a new approach to integrating its two decontamination and decommissioning projects in Ohio that will shorten overall schedules by several years and save over $25 million. These two projects, the Battelle Columbus Laboratories Decommissioning Project and the RMI Decommissioning Project, were originally scheduled as separate efforts proceeding in parallel. However, a decline in annual funding for the projects has made it no longer feasible or cost effective to run the two efforts in tandem. The Chicago Operations Office's new approach divides the two projects into sequential phases that can be funded in a more efficient manner.

The Battelle project comprises contaminated buildings at two separate research sites in central Ohio. According to James W. Thomas, the Department of Energy manager of both the Battelle and RMI projects, "we were already more than halfway through with Battelle's King Avenue site. It therefore made sense to throw the bulk of our resources at that job to finish it by the end of fiscal year 1996." With the small increase in the fiscal year 1995 budget, improved operations, and a major streamlining, Battelle developed a plan to shave 8 months off the King Avenue schedule and save close to $5 million. Significant cleanup at Battelle's West Jefferson nuclear research center has been held up by several issues related to that site's transuranic waste. "It made sense," Thomas says, "to take the time to resolve the transuranic waste issues and during that period turn all our attention to the RMI site."

Independent estimates show that, with optimal funding and a fixed price contracting approach, the RMI project could be completed in less than five years, resulting in substantial savings to the program. At the lower annual funding levels shown in the current project baseline, the RMI project would take 16 years to complete. "We needed an approach that would allow us to perform the work much more cost effectively," concludes Dave Dashevsky, the Chicago Operations Office Deputy Assistant Manager for Environmental Management activities. "By integrating the two projects and applying the funds more productively, we expect to save at least $25 million and be done a lot sooner."

Workers scabbling floor surfaces in the basement of Building 3 at DOE's Battelle Columbus Laboratories Decommissioning Project.

Over the next 18 months, a low level of effort will continue at the RMI project in Ashtabula, Ohio, to ensure that all safety systems are maintained and to begin procurement of a contractor to take down the entire facility. Once the King Avenue portion of the Battelle project winds down at the end of 1996, plans are to begin an immediate ramp-up of the RMI effort. When the RMI project is in full swing, a maintenance program will continue at Battelle along with the necessary staging to commence full-scale decontamination and decommissioning of the West Jefferson site once the funding can be redirected (currently assumed for fiscal year 1996).

The Chicago Operations Office thinks this integrated approach has broad applicability across the Environmental Management program. "We grew so fast over the past five years," Dashevsky notes, "that we thought we could do everything at once. This just can't happen. As the money gets tighter, we need to take the national cleanup effort a piece at a time and finish that piece before we begin the next."

EM Gets Leaner *from page 3*

The $10.6 billion in budget reductions ($4.4 billion of which will come from the Environmental Management program) announced in January 1995 by DOE Secretary Hazel R. O'Leary has accelerated plans to increase efficiency and productivity throughout the program in a variety of ways.

The contractor workforce reduction plan is part of a program-wide effort to cut costs that includes reductions in overhead and direct costs, more efficient practices such as increased privatization, and better management. The Environmental Management program is realizing 6-percent productivity savings during the current fiscal year and is recompeting over $28 billion worth of contracts and renegotiating others.

Since the Environmental Management program was established in 1989, both its number of contractor employees and its budget have increased about five-fold. Rapid growth without effective management and cost control, coupled with delayed downsizing after the end of the Cold War, are necessitating the comprehensive money-saving efforts.

Technology Briefs...Overcoming Obstacles to Progress

"MOLE" Robot Helps Lawrence Livermore Locate Onsite Critters

At Lawrence Livermore National Laboratory, a tiny video robot made partially from toy parts is allowing an environmental scientist to view underground animal species to ensure that they are not disturbed by Laboratory operations. The Miniature Optical Lair Explorer, or MOLE, is a five-inch long device that resembles a model all-terrain vehicle with rubber treads, a camera the size of a roll of film, and an 18-foot cord for remote control.

The unique MOLE device, which was designed and built by laboratory engineer John Christensen, is used by wildlife biologist Jim Woollett to determine whether burrowing animals are present onsite. In the past, it was necessary to erect night-time surveillance equipment to see if any creatures were using a den. The MOLE device can simply be sent down a hole during daylight hours to view the den's current inhabitants.

For more information about MOLE, contact Jim Woollett at the Lawrence Livermore National Laboratory at (510) 422-1157.

The Miniature Optical Lair Explorer, or MOLE, is a five-inch-long remote detection device used to survey wildlife.

Finding New Users for Excess Chemicals

Innovative chemical re-sale plans at the Hanford Site and at the Kansas City Plant are cutting costs, limiting liability, and protecting the environment by removing unneeded chemicals from the facilities. By selling the chemicals to buyers such as other Federal and State agencies or DOE sites, chemical brokers and distributors, industry, and educational institutions, the plants eliminate their responsibility for disposal of the chemical as "waste." Because waste generators retain "cradle-to-grave" responsibility for their waste, requiring payment of initial disposal fees (estimated at $300,000 to $400,000) as well as potential future liability expenses, the re-sale of the chemicals to other parties results in considerable cost savings.

For more information concerning chemical re-sale programs at the Hanford and Kansas City sites, contact Jean McKenna at (509) 376-1113 (Hanford Site) or Sue Nicodemus at (816) 997-3591 (Kansas City Plant).

Ground-Water Monitoring System Saves Money at Princeton Plasma Physics Laboratory

The Princeton Plasma Physics Laboratory is poised to install and implement the Dedicated Ground-Water Monitoring Pump System. This system places a sampling device in each monitoring well, which eliminates the need to purge 100-200 gallons of water per well; minimizes decontamination of sampling equipment; and eliminates the need to store, transport, and dispose of large quantities of monitoring well purge water.

The dedicated sampling system will yield more accurate samples by reducing the risk of inter-well cross contamination and increasing precision in the sampling point. Additionally, samples will be more representative because they will be collected without disturbance of the water column. Better samples translate into cost savings due to the greatly reduced need for resampling and re-analysis. In the first year of the operation, the system is expected to save about $14,000. Annual savings after recovery of the initial investment are estimated to be approximately $64,000.

For more information on the Dedicated Ground-Water Monitoring Pump System, contact Robert Sheneman at (609) 243-3392.

Vacuum Extraction System Captures and Treats Organic Vapors

A new vapor vacuum extraction technology is being used by the Idaho National Engineering Laboratory to extract organic vapors trapped beneath the lab's radioactive waste management complex. The technology, which was successfully tested at the laboratory in 1993, provides access to the subsurface via a network of vapor wells. When negative pressure is applied to the well, vapors are drawn through a pipeline into a treatment system. The vapors are then treated by various methods including incineration and, as will be used in Idaho, catalytic oxidation.

For more information about the extraction/treatment system, contact Lisa Green at (208) 526-0417.

Liability Reduction Activity Teams Formed at Rocky Flats

The Rocky Flats Field Office has recently taken an innovative approach to reducing the Rocky Flats Environmental Technology Site's seven major liabilities. After reviewing several reports on Rocky Flats, including the 1993 "Red Team" report, the Manager's Direct Reports developed the Liability Reduction Activity Teams concept to mitigate the site's liabilities. With the support of Rocky Flats Field Office Manager Mark Silverman, Liability Reduction Activity Teams have been formed to develop and implement plans for reducing each of the seven liabilities.

"Focusing on reducing the site's liabilities is nothing new to Rocky Flats, but establishing Liability Reduction Activity Teams is the new way of doing business in a team integrated approach," said Leanne Smith, Assistant Manager for Operations and Waste Management. She further explained that the Liability Reduction Activity Teams represent the concept of focusing on a Rocky Flats cleanup product in a manner that meets schedules and produces results.

The liabilities encompass a variety of decontamination and decommissioning activities, including stabilization of liquids and residues, remediation of contaminated areas, disposal of waste, and consolidation and deactivation of facilities. A specific outcome, or vision, has been established to mitigate each of the seven liabilities. These outcomes will guide the Liability Reduction Activity Teams in their work.

Liability Reduction Activity Teams, led by mid-level managers, are tasked with developing basic work plans to accomplish these complex cleanup efforts. Technical staffs from departments that typically function independently of one another have been empowered by the manager to work with the Liability Reduction Activity Teams to plan and execute these activities. For example, the basic plan to consolidate plutonium includes more than 80,000 interrelated activities. These operations must be coordinated by site specialists to ensure that the movements and resulting storage configurations provide the maximum levels of safety to the workers, the public, and the environment.

All Liability Reduction Activity Team leaders participated in a project management "boot camp" designed to provide team leaders with an intensive one-week hands-on project management experience. Jim Steward, a Liability Reduction Activity Team leader, stated that "planning is the most important element to successful project management."

The first task completed by the Liability Reduction Activity Teams were "work logics," which are detailed listings of unique work activities that

Continued on page 9

Simulations for Safety at the Savannah River Site

Personnel at the Savannah River Site's Defense Waste Processing Facility are ready to meet safety challenges, thanks to their extensive training on the Defense Waste Processing Facility simulator, the only operational full-scale process plant training simulator in the entire DOE Complex.

The simulator is an exact replica of the Defense Waste Processing Facility Control Room, complete with realistic operations scenarios and control stations. "We can do individual training, team concept training, evaluate procedures — it's a very flexible configuration for learning," says Defense Waste Processing Facility Manager Dave Zimmerman.

Since it became a full-scale training tool in October 1993, the simulator has provided 5,800 hours of training to 60 operators and supervisors. This training has prepared Defense Waste Processing Facility control room crews and startup test personnel for the facility's successful melter heatup and test pours, helped them make facility modifications, and validated system manuals and procedures. "The excellent conduct of operations we've seen during melter heatup and our first canister pour phase proves our simulator has been a big asset so far," says Dave Amerine, Defense Waste Processing Facility Program Manager.

The facility's use of the simulator has been effective not only in training, but also in cost. "It would take about $20 million to build this today, but we've done it over time at about a quarter of that cost," Zimmerman says.

The Defense Waste Processing Facility simulator has undergone careful scrutiny from independent review boards, including the Defense Nuclear Facilities Safety Board. It has won two George Westinghouse Signature Awards and has been through a patent disclosure process and marketing feasibility study. The simulator designers have shared their work with others across the DOE Complex, giving presentations at Hanford, Idaho, Rocky Flats, and West Valley.

The simulator will be upgraded to "limited full-scope configuration" in February 1995.

For more information, contact Dave Amerine at (803) 557-1050.

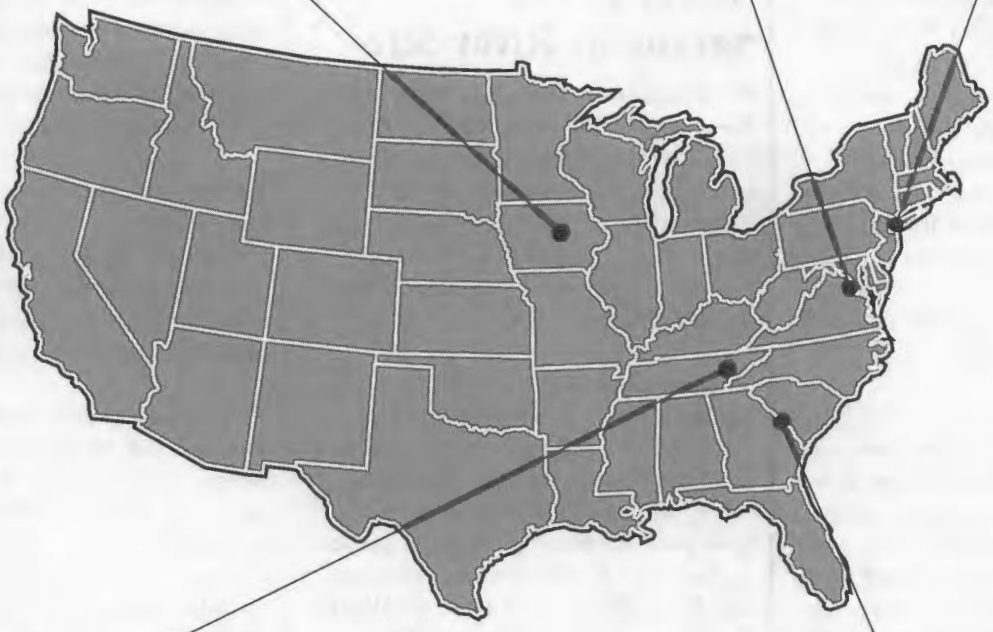
Environmental Management Snapshots

In The Field ...

Ames Laboratory is developing a new, cost-effective method for detecting radioactive elements at isotopic concentration levels in complex environments. The field-operational, hybrid technique called DLS-FANES (for diode laser-based spectrometries applied in a furnace atomization nonthermal emission source) should enhance and expedite the characterization of contaminants at the Nation's waste sites. For more information, contact Stephan Weeks, assistant chemist at Ames Laboratory, at (515) 294-7953.

Environmental Management 1995 is in! The Environmental Management program's annual report of progress and plans was completed in February and is now available. To obtain a copy, contact the Center for Environmental Management Information at 1-800-7-EM DATA.

Princeton Plasma Physics Laboratory recently recycled 200 tons of oil-contaminated soil into asphalt-paving material, saving $34,000 compared to the cost of disposing of the soil as hazardous waste. Recycling keeps the material out of a hazardous waste landfill, prevents air pollution caused by incineration, and reduces the need for new paving material.



Over 75,000 rusting drums that once covered 6 acres at the K-25 site in **Oak Ridge** have been repackaged and moved to indoor warehouses where they await final treatment and disposal. The drums, which contained contaminated sludges removed from 2 wastewater ponds, were repackaged at a rate of up to 300 drums per day, allowing workers to complete the project 4 months ahead of schedule at a savings of $2 million. For more information, contact Sandra S. Perkins at (615) 576-1590.

The Westinghouse Savannah River Company, operators of the **Savannah River Site,** recently awarded 25 contracts totaling more than $11.5 million to private companies and two educational consortiums. Over 59 percent of the total dollar amount of the contracts was awarded to small businesses.

Department Shifts Focus of Programmatic Environmental Impact Statement

In an effort to fulfill the requirements of the National Environmental Policy Act, the Department of Energy is working to develop the Environmental Restoration and Waste Management Programmatic Environmental Impact Statement (PEIS). Although the PEIS was originally proposed to formulate and implement an integrated environmental restoration and waste management program, the Department is modifying the impact statement to focus specifically on waste management systems.

The decision to modify the PEIS was made following DOE's further analysis of the scope of the PEIS. The Department concluded that it would not be appropriate to make programmatic decisions regarding cleanup strategies that would be applicable to all of its sites. Instead, DOE has decided to base cleanup decisions on site-specific conditions and develop appropriate actions with the approval of State and Federal regulators and involvement of the public.

The modified PEIS will focus its analysis on the effect of potential environmental restoration waste levels on waste management systems and will no longer analyze alternative environmental restoration strategies with an eye to making national programmatic decisions. In addition, its analysis of the treatment of mixed radioactive and hazardous waste will support the development of the Site Treatment Plans being prepared under the Federal Facility Compliance Act.

The Department anticipates releasing the draft PEIS in May 1995, with accompanying public involvement, review, and comment opportunities. If you are interested in receiving a copy of the draft PEIS, please call the Center for Environmental Management Information at 1-800-7-EM DATA.

DOE Revises Schedule For Submitting Proposed Site Treatment Plans

In response to a request from several States and in consultation with the National Governor's Association, the Department of Energy has decided to delay submission of the Proposed Site Treatment Plans being developed under the requirements of the Federal Facility Compliance Act. Previously scheduled for submission to the States and the Environmental Protection Agency for approval in February 1995, the Site Treatment Plans were submitted at the end of March 1995.

The States suggested this course of action at the November 30 – December 1, 1994, State/Department of Energy meeting. The delay allowed DOE to provide additional time to examine budgetary issues and schedules for mixed waste treatment. Despite the delay, the Department will be able to maintain its compliance obligation to submit plans at least 6 months prior to the October 6, 1995, Federal Facility Compliance Act deadline.

The Proposed Site Treatment Plans are the next step in defining how the Department will treat mixed hazardous and radioactive waste at 48 sites in 22 States.

For further information on the Department's efforts to comply with the Federal Facility Compliance Act, please contact the Center for Environmental Management Information at 1-800-7-EM DATA or access Internet at the following address: http://eagle.haz.ornl.gov/ffcabb/ffcamain.html.

Liability Reduction *from page 7*

need to be accomplished in a particular order. Currently, the Liability Reduction Activity Teams are developing resource loaded schedules, the first steps in the development of the Rocky Flats Integrated Site Baseline. This baseline will include the integrated schedule, scope, and costs to complete the work at Rocky Flats, and it will be used to form the Rocky Flats Fiscal Year 1997 budget request.

The new team approach coincides with the recently completed Rocky Flats Strategic Plan. "Rocky Flats established its strategic plan to support Tom Grumbly's six priorities," explained Leanne Smith. "The liability reduction activities are projects that carry out the objectives of the strategic plan, while using Rocky Flats' 'team' approach to accomplish the liability reduction activities. These Liability Reduction Activity Teams should serve as an excellent means for communicating to our customers where we are in our cleanup mission and what progress we're making."

For more information about Rocky Flats' Liability Reduction Activity Teams, contact Art Haugh of the Rocky Flats Office of Planning and Integration at (303) 966-4199.

National Environmental Policy Act Leads to Enhanced Efficiency, Public Participation at East Fork Poplar Creek

Employees and stakeholders at the East Fork Poplar Creek project in Tennessee have been able to cut paperwork and improve the public participation process under Secretary Hazel R. O'Leary's Secretarial Policy on the National Environmental Policy Act. The policy, issued in June 1994, states that DOE will rely on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process for reviewing environmental remediation actions taken under CERCLA.

At East Fork Poplar Creek, this means that because the feasibility study conducted for the project under CERCLA fully embraces National Environmental Policy Act values, it will be unnecessary to prepare an Environmental Impact Statement, which would have been performed under the National Environmental Policy Act process. National Environmental Policy Act values, such as analysis of cumulative, offsite, ecological, and socioeconomic impacts, are already addressed in the feasibility study.

The National Environmental Policy Act is also improving the public participation process at the project. The formal comment period on the East Fork Poplar Creek Proposed Plan was fixed at 45 days, as required by the National Environmental Policy Act and exceeding the CERCLA minimum period of 30 days. Additionally, to fully incorporate National Environmental Policy Act values, the East Fork Poplar Creek Record of Decision and supporting documents will be available to the public.

To keep stakeholders apprised of the process and information, Program Manager David Page sent stakeholders a letter explaining the procedure and order forms to help them obtain the documents.

For more information, contact David Page at (615) 576-1357.

Upcoming Events

EnvironMENTAL Fair Goes to Portsmouth, Ohio

Get ready for another EnvironMENTAL Fair! On April 20, 1995, the Portsmouth Gaseous Diffusion Plant and Shawnee State University will be joining forces to sponsor the Portsmouth, Ohio, EnvironMENTAL Fair on the campus of Shawnee State University. Approximately 2,000 6th graders from 4 southern Ohio counties are expected to attend.

The EnvironMENTAL Fair seeks to educate students about environmental cleanup and other environmental issues. After the fair's tremendous success in Oak Ridge, Tennessee, DOE agreed to sponsor a similar fair in southern Ohio.

The students will be able to enjoy 50 different hands-on activities run by Federal and Ohio State government agencies, educational institutions, and Portsmouth Gaseous Diffusion Plant and DOE contractors. The Ohio Environmental Protection Agency, the Divisions of Wildlife and Forestry, the National Oceanic Atmospheric Administration, and the Ohio State University-Piketon Research Center are just a few of the exhibitors.

For more information about the Portsmouth, Ohio, EnvironMENTAL Fair, contact coordinator Sandy Childers at (614) 947-1583.

Staffer Betty Coleman helps 6th graders learn where remedial work is taking place at the recent DOE EnvironMENTAL Fair in Oak Ridge, Tennessee.

Environmental Remediation '95 Conference

The Environmental Remediation '95 Conference will be held August 13-18, 1995, in Denver, Colorado, at the Colorado Convention Center. Sponsored by Environmental Management's Office of Environmental Restoration and hosted by the Rocky Flats Environmental Technology Site, Environmental Remediation '95 offers a look at the big picture of environmental restoration activities relevant to the Department of Energy complex.

Environmental Remediation '95 showcases valuable technical sessions, poster sessions, workshops, exhibits, and site tours to provide a broad technical and programmatic exchange. Participants will include the Department and its contractor community, other Federal agencies, public interest groups, regulators, industry, academia, and members of the general public.

Summaries of proposed presentations must be submitted by April 15, 1995. For more information, please contact Norma Castaneda at (303) 966-4226, Shelley Haynie at (202) 586-9417, or Julie D'Ambrosia at (301) 762-9364. Vendors interested in sponsoring an exhibit booth should call Greg Garner with Environmental Specialists, Inc. at (303) 690-4245.

Update on Spent Nuclear Fuel Management

The Environmental Management's Office of Spent Fuel Management has been concentrating its work in three principal areas: developing a national spent fuel management strategy; managing foreign research reactor spent nuclear fuel; and addressing environmental, safety, and health vulnerabilities related to spent nuclear fuel stored at Department of Energy facilities.

In June 1994, the draft *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (SNF/INEL EIS)* was issued. This document outlines the details of a national spent fuel management strategy. Throughout the summer of 1994, 33 public meetings were held in 20 locations around the country from Maine to Hawaii. By the end of the comment period, DOE had received over 5,000 comments on the two-volume *SNF/ INEL EIS*. The *SNF/INEL EIS* Project Office, located at the Idaho National Engineering Laboratory, is working to incorporate comments from the public and to identify preferred alternatives for the final *SNF/INEL EIS* that is due for issuance on April 30, 1995.

Volume I of the *SNF/INEL EIS* addresses the entire U.S. repository of spent nuclear fuel generated from DOE and Naval Nuclear Propulsion Program activities. It analyzes the potential 40-year environmental impact of 5 alternative proposals for managing and storing this spent nuclear fuel. The alternatives discussed in the draft *SNF/INEL EIS* vary from leaving the spent nuclear fuel in its current location to consolidating all spent nuclear fuel at one central location for interim storage until a decision on ultimate disposition is made. Volume II concentrates on the 10-year effects of spent nuclear fuel management and storage, as well as other Environmental Restoration and Waste Management decisions specific to the Idaho National Engineering Laboratory. The alternatives addressed in the draft range from phasing out waste management activities at Idaho National Engineering Laboratory, to continuing only current and previously authorized activities, to expanding waste management activities either for 10 years or indefinitely. The Record of Decision will be issued on June 1, 1995. For more information about the *SNF/INEL EIS*, contact the *SNF/INEL EIS* Project Office at 1-800-682-5583.

On April 12, 1995, DOE's Office of Spent Nuclear Fuel Management released the draft *Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel.* This environmental impact statement is being prepared in compliance with the National Environmental Policy Act. It addresses the potential environmental impacts associated with proposed actions by the Department in support of the U.S. nuclear weapons nonproliferation policy to minimize or eliminate the use of highly enriched uranium in civil programs worldwide. This environmental impact statement evaluates alternatives for management of foreign research reactor spent fuel, including variations in terms such as the amount to be managed, its transportation, its storage, and the possibility of chemical separation of the spent fuel. The document also evaluates alternatives such as continued storage and reprocessing of the spent nuclear fuel abroad.

The draft environmental impact statement was released for a 60-day public review and comment period starting April 21, 1995, and ending on June 20, 1995. Public hearings will be held at various locations nationwide during the comment period. The final environmental impact statement is scheduled to be completed by September 1995. DOE plans to issue the Record of Decision on this environmental impact statement before the end of December 1995. For more information about this environmental impact statement, contact Charles Head at DOE's Office of Spent Nuclear Fuel Management at (202) 586-9441.

Finally, the Department continues to address the list of 106 vulnerabilities in the spent nuclear fuel program identified by the Spent Nuclear Fuel Working Group in their December 7, 1993, report to the Secretary. Phase III of the Plan of Action to Resolve Spent Fuel Vulnerabilities was released on October 29, 1994. It constitutes the second and final update to the original Plan of Action. Phase I was released on February 7, 1994, and Phase II was released on April 29, 1994. The Phase III Plan of Action completes the integrated vulnerability planning process and contains revised information on vulnerabilities addressed in the Phase I and II Plans of Action. Funding issues have been resolved through fiscal year 1996, and individual action plans are now in place for all 106 vulnerabilities.

At the time of the Phase III release, a total of 15 vulnerabilities had been completely resolved. To the extent possible, stakeholder comments regarding individual sites were taken into account when developing and updating the individual action plans contained in the Phase III Plan of Action. DOE continues to invite public comments on the Phase III Plan of Action, and some site action plans may be revised based on input from stakeholders and continued follow-up by DOE.

To receive a copy of the Phase III Plan of Action, contact the Center for Environmental Management Information at 1-800-7-EM DATA. Comments on the Phase III Plan of Action should be directed to John J. Jicha, Jr., Director, Office of Spent Fuel Management, Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585.

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The Center for Environmental Management Information is currently updating its distribution list to remove old addresses and thereby reduce the number of mailings that are returned. If you have moved, changed jobs, or no longer wish to listed to receive mailings, please notify us to ensure that the appropriate changes can be made. **To be added on the Center's active listing, please complete and return the following information.**

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 4 • Number 3 Fall 1994

Argonne Experimental Reactor Cleanup Nearly Complete

The decontamination and decommissioning of the Experimental Boiling Water Reactor at Argonne National Laboratory in Argonne, Illinois, is approaching completion. The former experimental reactor was operated from 1956 to 1967 to demonstrate the feasibility for commercial electric power generation. The decontamination and decommissioning effort is being funded by the Department's Environmental Management program and, when the project concludes in Fiscal Year 1995, it will be the first reactor cleanup completed by the Environmental Management program at Chicago Operations.

As of September 1994, all reactor systems, the reactor vessel, and all radioactive components of the bioshield had been removed except for a small quantity of irradiated concrete. Final decontamination and decommissioning of remaining activated concrete in the bioshield is continuing, and planned activities include completion of waste packaging and shipping, and demobilization of the decontamination and decommissioning project. Final surveys and documentation will be completed during Fiscal Year 1995.

Once the decontamination and decommissioning activities are completed, the reactor shell building will be converted for interim storage of transuranic waste. This conversion will save taxpayers about $4 million over the cost of constructing a new building. An additional $3 million was saved by dramatically compressing the original decontamination and decommissioning schedule through extensive use of subcontracts, overseen by decontamination and decommissioning experts from Argonne National Laboratory.

Experimental Boiling Water Reactor project workers remove lead bricks from the bioshield. Most of the bricks that where removed were recycled.

For further information, contact Andrew Grabel of the Chicago Operations Argonne Area Office at (708) 252-2213.

Battelle Completes Planned Decontamination of Building KA-3

The Battelle Columbus Laboratories Decommissioning Project recently announced the completion of all planned decontamination work for Fiscal Year 1994 in Building KA-3. "All that remains is a small volume of unanticipated soil contamination below one interior support column," said Department of Energy Deputy Project Manager Tom Baillieul. "We will shortly have an assessment on whether we need to dig that soil out or can declare victory as is."

KA-3 is one of 15 buildings at Battelle that were radiologically contaminated as a result of work done under a contract with the Manhattan Engineering

Continued on page 2

HIGHLIGHTS...

Guest Editorial by James R. Janis 2

Pinellas Plant Releases Solvent Substitution Study 4

Cleanup at Nucla School is Completed 6

Spent Fuel EIS.....7

An Environmental Success Story 10

Lawrence Livermore Receives Water Conservation Award.....11

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Perspectives... A continuing series of guest editorials

Guest Editorial by James R. Janis, Executive Vice President, BNFL Inc.

"If the British can complete a decontamination and decommissioning project that essentially pays for itself through such things as metal recycling, then why can't we?"

With those words, DOE Assistant Secretary for Environmental Management Tom Grumbly recently issued a call for action to the Department as he referred to one of the most successful decontamination and decommissioning programs in the world.

The Capenhurst Gaseous Diffusion Plant, built in the 1950's, was the largest industrial building under one roof in all of Europe. The plant, which produced highly enriched uranium for the United Kingdom's defense program, is strikingly similar to the diffusion plants at Oak Ridge, Tennessee. It was shut down in 1982 to be replaced by the more advanced centrifuge enrichment technology. Since that time, an active and successful dismantling, decontaminating, and decommissioning program has been in progress and is now virtually complete. As Assistant Secretary Grumbly's challenge indicates, the United States can benefit greatly from BNFL's experience.

In about 12 years, BNFL has cleaned over 99 percent of an estimated 160,000 tons of Gaseous Diffusion Plant material to an unrestricted free release standard for reuse on the UK open market. Decontaminated materials include steel, nickel, copper, concrete, aluminum, and bronze. Some of the most difficult elements, including Technecium 99, have been successfully removed. Now that's successful decontamination!

How did BNFL do it? And how could we do it so quickly? After all, the regulatory regime in the United Kingdom is no less rigorous than in the United States. At least three major national agencies, in addition to local government organizations, have regulatory control. Environmental groups, the media, and local communities are just as watchful over BNFL's activities in the United Kingdom as such interests are over the Department of Energy here in the United States.

The answer is that in order to achieve a credible outcome, much effort was invested up front in defining the problems and then developing the patented technologies to overcome them. The result is a decontaminated building one-fifth the size of Oak Ridge's K-25 completed at a cost of $160 million. The latest estimate for K-25 decontamination and decommissioning is about $7 billion, or 50 times as much as Capenhurst.

Combine this unique, proven technology with a cost-effective surveillance and maintenance program and a state-of-the-art employee health and safety monitoring effort, and the Department can have a comprehensive decontamination and decommissioning program unrivalled anywhere else in the world.

BNFL has a 20-minute video tape that shows the technologies in use at Capenhurst. A limited number of copies are available for loan by calling BNFL Inc. at (202) 785-2635.

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. *If you have an editorial that you would like considered for inclusion in* ***EM Progress****, contact Beverley Heffernan, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-3919, fax (202) 586-9172.*

Battelle Cleanup *from page 1*

District. From 1943 until the late 1980's, Battelle performed atomic energy research under the contract for the Department and its predecessor agencies. KA-3 was the largest and most contaminated of the 9 buildings being decontaminated at Battelle's King Avenue site in Columbus, Ohio. The building was used for research with uranium and beryllium and housed a powder metallurgy facility, a melt facility, a metallography facility, a ceramics research facility, and a uranium-235 processing facility. Work on the first nuclear submarine, the Nautilus, was conducted in this building.

The decontamination effort over several years in KA-3 included removing contaminants (primarily uranium and thorium) from 191 rooms, involving 174,000 square feet of surfaces; 3,200 linear feet of drain lines; and 8,300 cubic feet of subfloor soil. The work also entailed removing ducts, electrical conduit, water lines, and contaminated laboratory equipment. Chemicals, equipment, and other materials from this facility were removed, separated, and packaged for reuse, recycle, or off-site disposal.

KA-3 was decontaminated on a no-fee, cost-share basis, with the Department paying 90 percent of the cost. For further information, contact Helen Latham at (614) 424-4062.

Argonne Methodology Converts Ash Waste to Usable Ceramics

Scientists at the U.S. Department of Energy's Argonne National Laboratory have developed a process that uses ash from incinerated garbage to produce dense ceramic materials. This ash waste often contains lead and cadmium, making it difficult to dispose of effectively in landfills. By converting the ash into a ceramic material, disposal is made easier and more economical.

"A large municipal incinerator can burn 1600 tons of garbage daily, reducing the volume of the garbage while producing valuable steam for power generation," said Argonne chemist Arun S. Wagh, one of the developers of the process. However, the heavy metals that existed in the garbage are still present in the ash after incineration. Argonne's new conversion process mixes the ash with magnesium oxide and phosphoric acid, producing a cement-like paste that can be poured and shaped just like cement.

"It dries and becomes hard in about 30 minutes," said Wagh. "The end product is a very dense material, not at all porous, making it stronger than concrete." Since the end product has these qualities, it can be incorporated into the construction of storage areas for the waste-generating facilities and at the containment sites, as well as roads within the waste disposal areas. In addition, due to its effectiveness at the municipal incinerator plants, the new process can also be used to stabilize ash produced at industrial incinerators and powerplants.

Argonne scientists Arun Wagh and Dileep Singh can make a construction material twice as strong as concrete from ashes left from incinerated garbage.

The research for the process was funded by the Department's Office of Environmental Management through its Mixed Waste Integrated Program. For more information about Argonne's ash waste conversion process, please contact Catherine Foster at (708)252-5580.

Stakeholders Welcome Outreach Efforts

Two-day meetings in Carlsbad, New Mexico, in late August and September marked the initiation of a series of monthly sessions that present Waste Isolation Pilot Plant stakeholders with an opportunity to ask questions, voice concerns, and give suggestions.

Meetings held on August 30-31, 1994, were attended by the Environmental Protection Agency, the New Mexico Environment Department, the Environmental Evaluation Group, the New Mexico Attorney General's office, and others. At these meetings, experts from the Department and Sandia National Laboratories explained a new process developed to streamline Waste Isolation Pilot Plant compliance activities. Robert Neill, the Director of the Environmental Evaluation Group, complimented the Department for bringing people in to "interact in a meaningful way." The meetings are scheduled through January 1995.

Before it can be certified to begin receiving waste, the Department must show that the plant is able to comply with Environmental Protection Agency regulatory requirements. A process called the System Prioritization Method will be used to help the Department decide which activities best meet schedule, cost, and compliance goals while providing a scientifically sound method for demonstrating compliance. This process also allows the Department to address stakeholder concerns early and throughout the process of regulatory compliance. By using this method with its reliance on stakeholder input, the Department expects to address concerns more effectively and keep the 1998 work schedule on track.

Meetings held on September 28-29, 1994, addressed stakeholder issues pertaining to the performance assessment mechanism that will be used to evaluate experiments, engineering, and design activities necessary for demonstrating regulatory compliance.

Subsurface Wall Constructed to Contain Ground-water Plume

Contractors have completed the construction of an underground barrier wall at the southern boundary of the Portsmouth Gaseous Diffusion Plant. Completed ahead of schedule, this construction is part of ongoing environmental restoration activities at the facility.

The underground barrier wall was built to prevent ground water containing trichloroethylene, an industrial cleaning solvent, from migrating outside the plant where nearby residential water wells have already been affected. The ground-water plume is located just south of a low-level waste landfill that has been closed in accordance with Ohio Environmental Protection Agency requirements.

Construction of the barrier began on August 30 and work was completed on September 15, well ahead of the estimated installation time frame of five weeks. The wall was formed beneath the surface through the use of a crane mounted with deep soil mixing equipment. During the construction, four tandem drilling augers mixed the soil with a bentonite clay slurry to an average depth of 25 feet. The wall was built in an east-to-west direction, parallel to and 30 feet north of the southern boundary of the plant. It is approximately 3 feet wide and extends at least 2 feet into the bedrock layer.

Based on computerized ground-water modeling, the barrier is expected to contain and divert the ground-water plume for nearly four years. This will allow time for plant officials to develop and implement a final remediation strategy for the plume.

For more information, contact Sandy Childers at (614) 947-1583.

A crane equipped with four tandem drilling augers is used to construct a subsurface clay mortar wall to contain and divert ground water contaminated with TCE away from the boundary of the Portsmouth Gaseous Diffusion Plant property.

Pinellas Plant Releases Solvent Substitution Study

The Chemistry Laboratory, in conjunction with the Solvent Substitution Committee at the Pinellas Plant in St. Petersburg, Florida, has released a study that evaluates the effectiveness of several cleaning solutions that have recently come onto the market. The study, titled "Cleaning Study of Substitutes for CHC/CFC Solvents, CHM93-025," compares the effectiveness of 12 new cleaning solutions, or degreasers, on 8 different contaminants commonly encountered in the manufacturing process.

Researcher Dan Kettleborough uses the water-drop contact angle measuring device to test the relative cleanliness of stainless steel and ceramic surfaces to exacting specifications.

Researchers are investigating the new degreasing solutions as possible replacements for chlorinated hydrocarbon and chlorofluorocarbon solvents that are widely used in electronic component plants like the Pinellas Plant. These solvents, which are ozone-depleting, are used to clean metal and ceramic parts to the exacting specifications of the modern electronics industry.

The new cleaning solutions were rated on their ability to dissolve various oil, wax, and grease contaminants from small, stainless steel pieces of metal called 304L coupons. Testing consisted of first soaking the contaminated coupons with the cleaning agents for a specified time and then determining the cleanliness of the coupons using water-drop contact angle measurements. The water-drop contact angle technique is a rapid, repeatable method for measuring the relative cleanliness of stainless steel surfaces.

The study identified the Sonicor 103 cleaning solution to be the most effective solvent in removing both aqueous and non-aqueous contaminants. Consequently, Sonicor 103 was selected for further side-by-side cleaning trials with trichloroethylene on actual production parts in the chemical cleaning operations. It is expected that trichloroethylene will be eliminated on actual production parts in the chemical cleaning operations and also eliminated from the plant at the conclusion of these trials. The study was also used as the basis for the replacement of 1,1,1-trichloroethane with Oakite NST in the machine shop degreaser.

For more information, contact Dan Kettleborough at (813) 545-6183.

Technology Briefs...Overcoming Obstacles to Progress

Transient Infrared Spectrometer Developed

Ames Laboratory in Iowa has developed a monitoring method that measures the infrared spectra of opaque moving materials in real time without contact. This method, called Transient Infrared Spectroscopy, can monitor continuous solids, pellets, powders, and viscous liquid materials at waste processing facilities, enabling operators to optimize the quality of processing. One process, now being developed at Brookhaven National Laboratory and Rocky Flats, will use Transient Infrared Spectroscopy in a method of immobilizing radioactive metal-salt waste by encapsulating it in polyethylene.

For more information, contact John F. McClelland at (515) 294-7984.

Barcodes Simplify Tracking of Hazardous Waste

The Department's Kansas City Plant in Missouri has improved hazardous waste traceability by implementing a barcode system in its waste management activities. Developed by Idaho National Engineering Laboratory and installed in late 1993, the system responds to a Department directive to electronically track the movement of all hazardous waste.

Barcoding is much faster and more operator friendly than previous systems. A complete history of the waste delivery and disposal is recorded during three transactions: (1) container delivery, when waste management ships an empty container to a specified department; (2) pickup, when the container is approved to be shipped back to waste management; and (3) disposal, which completes the cradle to grave data collection for the system.

According to Kansas City Plant senior environmental safety and health technologist Tim Hull, the Kansas City Plant barcodes about 1,000 containers from up to 120 hazardous waste streams each month. "Before barcoding we were at the mercy of handwritten log books, identification tags, and human error," said Hull. "Today's system is current, accurate, totally automated, and best of all, user friendly. Our goal is to have the electronic tracking system serve as a model for all Department facilities."

For more information regarding the Kansas City Plant's Waste Management barcoding system, contact Tim Hull at (816) 997-2997.

Laser-Based Decontamination Processes Reduce Risks and Storage Space

Researchers at Ames Laboratory are using the precision of lasers to separate useful materials from radioactive and chemical contaminants. The two new laser-based decontamination techniques, called surface decontamination and bulk decontamination, produce little or no secondary waste and greatly reduce the risk of worker exposure to hazardous materials. The techniques may also greatly reduce waste storage needs, simplify the storage requirements for some materials, and make it possible for the United States to reuse tons of valuable metals. For more information, contact Martin Edelson at (515) 294-4987.

Mobile Laboratory Tests Soil at Gunnison Site

A new mobile laboratory displayed its ability to detect minute traces of contamination during a demonstration at the Gunnison Uranium Mill Tailings Remedial Action site. The special laboratory, known as the Mobile Demonstration Laboratory for Environmental Screening Technologies, was developed by scientists at the Ames Laboratory. Because the laboratory is mobile, it can sample and analyze soil and other materials in the field, minimizing the costs, risks, and time required for such testing. For more information, contact Marvin Anderson at (515) 294-7058.

Secretary of Energy Hazel O'Leary greets the National Champion Mine Rescue Team during an October visit to the Waste Isolation Pilot Plant in Carlsbad, New Mexico. From left to right, team members are Joe Baca, Clem Quintana, and Joel Howard.

Nucla School Cleanup Completed

Fall classes at the Nucla Elementary School in Nucla, Colorado, started on schedule this August following a three-month-long cleanup effort by the Department of Energy's Uranium Mill Tailings Remedial Action Project. The cleanup involved the removal and replacement of concrete flooring in the school gymnasium and the primary block classrooms, removal of asbestos floor tiles in hallways, and removal and replacement of the basement floor and suspended ceilings. The entire cleanup was completed during the three-month summer vacation.

The Nucla Elementary School was classified as a vicinity property under the Uranium Mill Tailings Remedial Action Project. Vicinity properties are those areas away from the inactive mill sites where tailings were used for construction purposes or carried by wind or water. When originally built, tailings were used in the school's construction. Once removed, these materials were transported to the former Naturita uranium mill processing site where they will be stockpiled until Phase II of the project.

The major part of the Uranium Mill Tailings Remedial Action Project at Naturita is the removal of the contaminated materials and buildings left at the former uranium mill processing site. Demolition of the buildings is expected to begin soon. The remediation is necessary because the exposed tailings emit radon, a radioactive gas that is a threat to human health with extended exposure. Stabilizing and isolating the tailings decreases the long-term risk associated with radon emanation.

The Naturita Uranium Mill Tailings Remedial Action Project is one of 24 sites being cleaned up nationwide. To date, surface remedial action has been completed at 11 sites including Canonsburg, Pennsylvania; Shiprock, New Mexico; Falls City, Texas; Salt Lake City and Green River, Utah; Lakeview, Oregon; Tuba City, Arizona; Riverton and Spook, Wyoming; Durango, Colorado; and Lowman, Idaho. Eight sites are currently being remediated and five are in the planning stages.

Anyone interested in additional information concerning the Uranium Mill Tailings Remedial Action Project may call the Uranium Mill Tailings Remedial Action Project Office toll-free at (800) 523-6495 or contact Dave Jackson at (505) 845-5699 or Melanie Majors at (505) 880-2520.

First U.S.-Origin Spent Fuel Shipment Arrives at Savannah River Site

On September 30, 1994, the first shipment of U.S.-origin spent nuclear fuel from foreign research facilities finally arrived at the Savannah River Site in South Carolina. The shipment was delayed by an eleventh-hour lawsuit filed against the Department of Energy by the State of South Carolina on September 9 contesting the shipment of spent fuel to the Savannah River Site.

In conjunction with the Federal Government's efforts to track and control uranium and prevent its use in weapons, the Department agreed to accept shipment of U.S.-origin weapons-grade uranium spent fuel from nuclear research reactors in Europe. The decision to accept the foreign spent fuel followed the completion of an Environmental Assessment on the Urgent Relief Acceptance of Foreign Research Reactor Spent Fuel and the issuance of a Finding of No Significant Impact for the proposed action.

As part of the agreement for storing the spent fuel, the U.S. Government also agreed to transport the spent fuel when it is eventually sold to reactor operators. The first shipment of spent fuel was scheduled to be transported into the United States through the military port at Sunny Point, North Carolina, and then delivered by rail to the Savannah River Site for interim storage.

Assistant Secretary for Environmental Management Tom Grumbly said that "by bringing suit, the State [of South Carolina] had unnecessarily raised public fears about an action that both is safe and serves vital international nuclear nonproliferation interests. Accepting this material does not endanger public health or safety and is occurring only after extensive environmental analysis and in full compliance with all environmental laws."

A hearing on the lawsuit will begin in November. The State of South Carolina contends that the Department did not adhere to the National Environmental Policy Act, which requires all Federal agencies to ensure that environmental information is available to both Federal officials and citizens before major Federal action decisions are made.

For more information on the shipment of spent fuel to South Carolina, contact Jayne Brady at (202) 586-5820.

Nuclear Regulatory Commission inspectors check the foreign reactor spent nuclear fuel transportation package once it is loaded onto a rail car.

What is this Spent Fuel Environmental Impact Statement Everyone Is Talking About?

The National Environmental Policy Act and its implementing regulations require that Federal agencies assess possible impacts of a proposed action to the environment and gather public opinion in order to make informed decisions. To this end, the *U.S. Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (SNF/INEL EIS)* has been drafted to address proposed future spent fuel management activities for many years at the Department of Energy and Navy sites from coast to coast.

At one time, the Department was preparing two separate environmental impact statements that included spent nuclear fuel management—one for the entire complex and one specific to the Idaho National Engineering Laboratory. However, a Federal court ruling in June 1993 barred the Department from receiving additional spent fuel in Idaho until an expanded environmental impact statement could be completed. As a result of the court decision, the Department chose to combine the two studies into one document.

The State of Idaho, the Department of Energy, and the Navy entered into an agreement to allow a limited number of shipments of naval spent fuel into Idaho before completion of the *SNF/INEL EIS*. This agreement, incorporated into an amended court order in December 1993, established deadlines for completion of the document.

The draft *SNF/INEL EIS* is divided into two parts. Volume 1 is the programmatic spent nuclear fuel portion of the document in which the Department evaluates a range of alternatives about managing its nationwide inventory of spent nuclear fuel. Volume 2 is the portion specific to the Idaho National Engineering Laboratory that will help officials decide the direction of Environmental Restoration and Waste Management programs including spent fuel management at the Idaho site.

The draft *SNF/INEL EIS* does not address spent nuclear fuel from most commercial power reactors. Although a proposed future policy of accepting foreign spent nuclear fuel containing U.S.-origin uranium is being discussed in another environmental impact statement, the draft does consider possible locations and transportation routes to manage that fuel should it be returned.

In addition to comparing possible alternatives, the decisionmaking process for environmental impact statements includes many avenues or means for public participation, including formal comment on the adequacy of the draft document. The public has raised issues and concerns during 20 public hearings held on the draft programmatic environmental impact statement that addresses spent nuclear fuel management activities across the Department of Energy complex. The Department held four hearings in the State of Idaho, and this public involvement helped the Department to identify INEL cleanup and waste management issues to be addressed in finalizing the *SNF/INEL EIS*.

The final document will be issued on or before April 30, 1995. Upon considering the options in the final document and associated stakeholder concerns, the Department will announce its decision in a Record of Decision on or before June 1, 1995.

For more information about the *SNF/INEL EIS*, call David Hoel in the EM Office of Spent Fuel Management at (202) 586-3977 or the toll-free information line at (800) 682-5583.

The Department and its predecessor agencies have transported, received, stored, and reprocessed some 100,000 metric tons of spent nuclear fuel in the past four decades. Because the end of the Cold War reduced the need for defense materials, the Department is phasing out reprocessing of spent nuclear fuel, which removes usable products for reuse, leaving 2,700 metric tons of spent nuclear fuel in storage at various locations in the United States and overseas.

Ten sites are under consideration for managing varying amounts of the Department's spent nuclear fuel, including spent fuel used in naval activities. Three of the sites have managed much of the large-scale operations in the past. They are Hanford Site near Richland, Washington; Idaho National Engineering Laboratory in southeastern Idaho; and Savannah River Site near Aiken, South Carolina. Other sites being considered are Oak Ridge Reservation near Oak Ridge, Tennessee, and Nevada Test Site near Las Vegas, Nevada.

Five sites are being considered for managing only naval spent nuclear fuel. They are Norfolk Naval Shipyard in Portsmouth, Virginia; Portsmouth Naval Shipyard in Kittery, Maine; Puget Sound Naval Shipyard in Bremerton, Washington; Pearl Harbor Naval Shipyard in Honolulu, Hawaii; and the Department of Energy's Kesselring Site in West Milton, New, York.

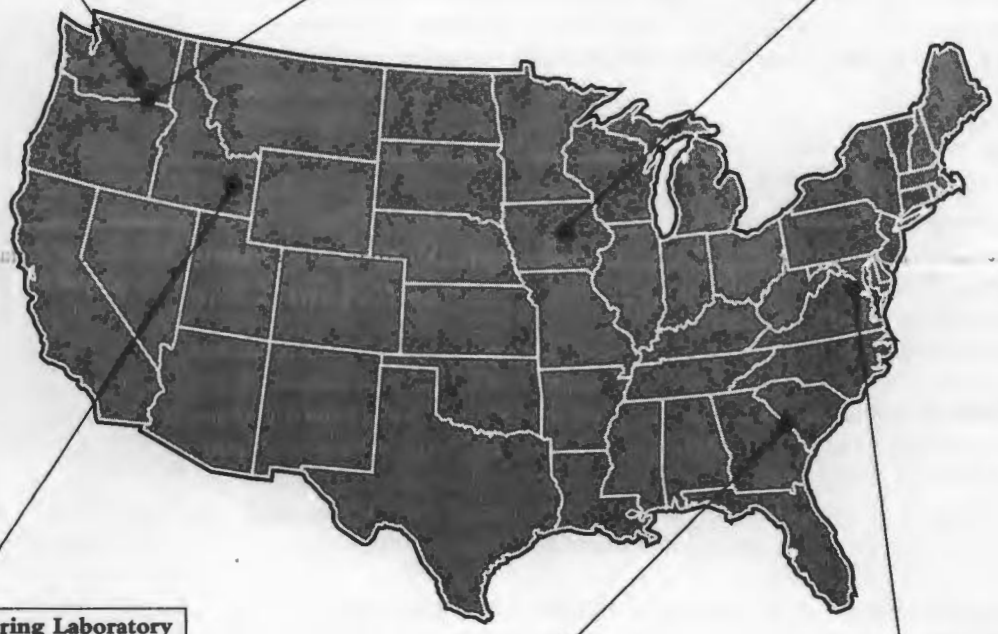
Environmental Management Snapshots

In The Field ...

Hanford Site has put another mixing pump, the second of its kind for waste tank use, through operational tests. With completion of testing, the mixing pump will be placed in storage to be used as backup to the existing pump for Tank 101-SY, one of Hanford's large underground waste tanks.

The **Salmon Corps Program** was kicked off on October 21, 1994, at the new Wanaket Wildlife Refuge near Umatilla, Oregon. The project, which was created as a partnership of the Umatilla and four other Northwest Tribes, the Department of Energy, the Columbia River Inter-Tribal Fish Commission, and the Earth Conservation Corps, will work to restore fish habitats in the Columbia River.

Ames Laboratory scientists are using the results of a recent expedited site characterization demonstration to compare conventional assessment technologies with innovative environmental assessment technologies from a number of different technology development companies nationwide. The expedited site characterization methodology reduces the time and expense of identifying contaminants, the first step toward cleaning up contaminated sites.



Idaho National Engineering Laboratory management operations were assumed by Lockheed on October 3, 1994. The Office of Environmental Management is now the lead program for the Idaho office, conducting environmental management and technology development activities.

Savannah River Site has reached the 2-billion-gallon treatment milestone in its program to clean up contaminated ground water. The treatment program has removed over 315,000 pounds of chlorinated solvents that had been used since the 1950's for cleaning and degreasing operations at the site.

In serving as a distribution center for requests for Environmental Management employment information, the **Center for Environmental Management Information** in Washington, D.C., has received over 15,000 calls requesting employment information, generating over 20,000 written responses. As a result of the Center's assistance, the pool of applicants processed by the field offices reflects a more diverse and technically talented group than would have occurred through routine recruiting efforts.

College Students Gain Experience Through Summer Internship

The Department of Energy's Formerly Utilized Sites Remedial Action Program has provided seven college science and engineering majors the opportunity to gain actual work experience. The students are based at Bechtel's Remediation Center in Oak Ridge, Tennessee, and work on projects suited to their individual interests. The Formerly Utilized Sites Remedial Action Program is an environmental cleanup program located at 46 sites in 14 States.

Phil Gibbs spends time at the Department's Colonie Interim Storage Site in New York researching new methods for reducing the volume of low-level radioactive waste.

Andrea George has been studying the negative effects of ambient temperature on radiation monitors at several program sites. "I've enjoyed the work," says George, a master's degree candidate at Vanderbilt University. "I've nearly completed the research and plan to go into this type of work after I get my master's degree."

Phil Gibbs, also from Vanderbilt, is pursuing a graduate degree in environmental engineering. "I've learned so much this summer," says Gibbs, who is currently working on volume reduction techniques for low-level radioactive waste at the Colonie Interim Storage Site. "This really firms up what I've learned in class."

Aaron Love is the first co-op student to complete a bachelor's degree through the Minority Engineering Scholarship Program, which is coordinated with Bechtel by the University of Tennessee. While in the program, Love spent five work sessions on the Formerly Utilized Sites Remedial Action Program and Vega Alta and gained valuable experience along with approximately $11,000 toward his educational expenses. He received his Bachelor of Science degree in civil engineering in May 1993 and is pursuing a master's degree in civil/structural engineering at the University of Maryland.

The Minority Engineering Scholarship Program has also helped Jared Johnson, a civil engineering major from the University of Tennessee. Johnson began his first summer work session on the Formerly Utilized Sites Remedial Action Program in Oak Ridge and is completing a session in Chicago on the Palos Forest project.

Several college students are working as summer hires at the Formerly Utilized Sites Remedial Action Program. Latrice McBee, a chemical engineering major from Vanderbilt, is currently helping update calculation logs and work instructions for sampling waste drums at the Colonie site. "The best experience I've gotten has been with the work instructions," McBee says. "They gave me an insight into what chemical and environmental engineers really do."

Other students working as part of the Bechtel summer hire program include Kimberly Scott from Vanderbilt, Bryndan Moore from Howard University, and Sonja Trautner from California Polytechnic University. For more information about the Formerly Utilized Sites Remedial Action Program summer hire program, call Sandra Plant at (615) 576-5034.

SAFER Process at Savannah River Saves Time and Money

The Department of Energy, Savannah River, and Westinghouse Savannah River Company Environmental Restoration Department are successfully piloting the newest Energy Department strategy to involve regulators earlier in the cleanup decision-making process, while reducing associated costs and improving the efficiency of the cleanup program. Savannah River is making use of the Department's new time strategy, SAFER (Streamlined Approach for Environmental Restoration), to accelerate and improve waste site assessment and remediation.

"The Department created SAFER because the assessment of waste sites consumed too much time and money and generated data that were not essential," explains Savannah River environmental scientist Brian Hennessey. "SAFER typifies many Departmental initiatives around the complex today; it focuses environmental data collection where it belongs — on cleanup decisionmaking."

The successful scoping of the F and H Area Retention Basins cleanup is the beginning of the SAFER pilot project at Savannah River. These open, unlined basins were used from 1955 to 1973 for temporary emergency storage of cooling water from the site's chemical separations facilities. Preliminary sampling at the basins was performed in January 1994, and the next phase of the characterization will begin when work plans are approved (anticipated in late 1994).

SAFER strategies and techniques are also being applied to the D Area Oil Seepage Basin cleanup. Project scoping began in May 1994, and the cleanup is scheduled to begin with a buried drum removal in the fall.

Continued on page 10

Minimum Additive Waste Stabilization: An Environmental Success Story

As part of the Department's efforts to seek out new technologies for environmental cleanup at its waste sites, Argonne National Laboratory and GTS Duratek, a medium-sized niche technology company based in Columbia, Maryland, and Catholic University of America, have moved the company's innovative radioactive-waste vitrification process from the laboratory to demonstration at a waste site. The vitrification process, which converts radioactive waste to glass, was successfully demonstrated as part of the Department's Minimum Additive Waste Stabilization Program.

Minimum Additive Waste Stabilization is a waste management philosophy in which waste streams are viewed as resources to support treatment processes. This particular demonstration integrates three technologies usually used separately for site remediation—vitrification, soil washing, and ion-exchange treatment of waste water. As a result, the entire process can be optimized, thereby reducing the final waste volume and the disposal costs. GTS Duratek's novel vitrification technology significantly reduces the volume of radioactive waste for disposal and traps both the radioactive and hazardous constituents in glass to prevent leaching.

The move from laboratory process to commercial technology has taken about four years. The Department first selected the GTS Duratek vitrification technology for development in late 1990, and in 1991 and 1992, a treatability study was conducted on waste streams from the Department's Weldon Spring and the Y-12 Sites at Oak Ridge.

In 1993, GTS Duratek further demonstrated the Minimum Additive Waste Stabilization concept, at bench scale, on waste streams from the Fernald Site. A *DuraMelter*™ vitrification furnace has been constructed and delivered to the Fernald Environmental Management Project, and a pilot-scale demo to process radioactive waste began there in late June 1994. This success has resulted in a contract for the country's first commercial-scale vitrification facility to treat mixed waste at the Department's Savannah River Site. This facility is scheduled to begin treating mixed waste at the M-Area in September 1995.

In addition, GTS Duratek and Chem-Nuclear Systems, Inc., have initiated a joint venture to build a similar system at an existing Chem-Nuclear waste management facility. Bench-scale testing of the process is ongoing. The new venture would operate under the name "*DuraChem*™." The initial DuraChem facility would be designed to convert low-level radioactive waste from industrial facilities, commercial nuclear powerplants, hospitals, and laboratories into durable glass. It would be the first dedicated fixed facility in the United States to convert low-level radioactive waste into glass.

The agreement allows these companies to act quickly in addressing generators' volume reduction needs. This is especially important given the current lack of disposal access and scarcity of storage capacity. The commercial facility is expected to begin operating in late 1995.

For more information on GTS Duratek's vitrification process, contact Robert Prince at (410) 312-5100.

SAFER Process *from page 9*

Through SAFER, external regulators were asked to join Savannah River in the pre-planning stages of the retention basin cleanup. This also allowed Savannah River experts the opportunity to demonstrate new cost-saving technologies, such as an innovative robotic pipe crawler for remote investigation of a process sewer line leading to F Area Retention Basin. The successful pipe crawler investigation resulted in eliminating unnecessary sampling costs, as well as reducing paperwork associated with that effort.

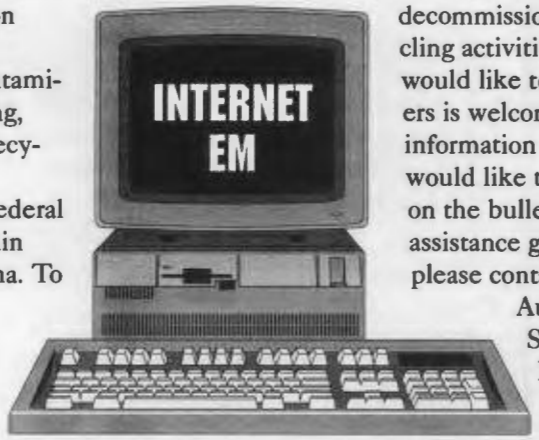
Wayne Johnson, Westinghouse Savannah River Company/Environmental Restoration manager of waste site investigation, says if the pilot effort is any indication, the Department's SAFER program will be a big success at Savannah River. "Getting our stakeholders' buy-in up front on our cleanup proposals seems like common courtesy, but it's much more like good business sense for Savannah River and taxpayers," he says. "Before SAFER, we would prepare detailed proposals on our planned work. Then the regulators would send us their comments on the why's and where's of our plans. With SAFER, when we prepare our proposals on how to do the cleanup work, the regulators can quickly approve them because they were involved from the start. That shortens the time it takes us to get to remediation."

For more information, contact Brian Hennessey at (803)725-7032.

Westinghouse Savannah River Company Environmental Restoration project manager, Kevin Kuelske, Montenius Collins of Savannah River Technology Center, and Harry Kattegat of SSQ/NDE inspect the robotic pipe crawler used in the characterization of process sewer lines leading to the F Area Retention Basin at SRS.

Two New Bulletin Boards Now Available

Bulletin boards are an excellent vehicle for information exchange. The Department of Energy is encouraging both internal and external communication among workers involved in decontamination, dismantling, demolition, and recycling activities throughout the Federal complex and within the industrial arena. To this end, the Department's Regulatory Integration Division, Office of Program Integration, Environmental Restoration has installed two new bulletin boards on the INTERNET EM World Wide Web server.



These bulletin boards will feature information and activities concerning decommissioning and recycling. A special corresponding news group for active information exchange among interested parties will be available on the decommissioning bulletin board. This group will accommodate those wanting to "swap" ideas, seek help or advice, inform users about what is going on at their site, or assist in policy and guidance development implementation.

Accessing the bulletin boards is simple. If you are using Mosaic as your browser, select from the file menu "Open URL... " In the edit field type "HHTP://www.em.gov" and then click on OK. The new bulletin boards are listed under "EM Related Servers." Those users interested in decommissioning activities should select the DOE Decommissioning Program highlighted area; those interested in recycling activities should access the DOE Recycle Program highlighted area. If you are not using Mosaic and need assistance getting online, help is available by contacting the individuals listed below.

The new bulletin boards are in the early development stage, and any information concerning decommissioning and recycling activities that you would like to share with others is welcomed. If you have information to share and would like to be included on the bulletin, or need assistance getting online, please contact Sherie Earle, Automated Sciences Group, Inc., at (301) 903-1294 (internet address: sherie.earle@em.doe.gov) or Stephen Warren, U.S. Department of Energy, at (301) 427-1665 (internet address: stephen.warren@em.doe.gov).

Lawrence Livermore Receives Award for Water Conservation Program

The Department of Energy and the Federal Interagency Energy Policy Committee helped kick off the 15th annual Energy Awareness Month this October by presenting Lawrence Livermore National Laboratory with a Federal Energy and Water Management Award for its water conservation campaign.

The laboratory's Water Conservation Group spearheaded the campaign in 1988 to reduce water usage at the lab through employee education and direct water conservation measures. In effect from 1988 through 1993, the water conservation campaign eventually saved the laboratory $4.5 million and a half a billion gallons of water during the time of the worst drought in California's recorded history.

The conservation effort began by retrofitting domestic pluming fixtures—toilets, urinals, sinks, and showers. The 2 million square feet of laboratory lawn was watered only at night, using as little water as possible to maintain a healthy lawn. This conservation effort was implemented by replacing mechanical irrigation controllers with more efficient computer programmable controllers. Operation of the lab's car wash was reduced, and a moratorium was placed on fire hydrant testing. In addition, cooling towers were made more efficient through the use of automated systems, and treated ground water was used for cooling towers make-up and watering trees.

According to the Water Conservation Group's Rudy Parisotto, while water use at the Lab has since crept back up with the easing of the drought, he expects consumption to remain about 20 percent below the 1987 levels. "The drought may be over for now, but lab employees have not changed their conservation mindset—no one wastes water," said Parisotto.

In his letter informing the Water Conservation Group of the conservation award, Mark Ginsberg, executive secretary of the Federal Interagency Energy Policy Committee, said the lab's accomplishment "serves as an excellent model for others to emulate." The laboratory's water conservation methods have become a model for agencies such as the City of San Francisco Water Department, Sandia National Laboratories, and Stanford's Linear Accelerator Center.

For more information about Lawrence Livermore National Laboratory's Water Conservation Group and its conservation project, contact Gordon Yano at (510) 423-3117.

Catfish Call Hanford Home

More than 20,000 catfish are now in residence at the Department's Hanford Site, waiting to be placed in Eastern Washington lakes. This fish-rearing experiment, the fourth to be conducted at Hanford, hopes to demonstrate the feasibility of using surplus facilities for growing a variety of fish species. Previous experiments have focused on salmon and sturgeon.

The experiment is being conducted in a concrete structure located next to the Columbia River that was once part of a water purification facility. If successful, the Department can make these surplus facilities available to Tribes, State, and Federal agencies or private businesses to grow fish for the sport fishery or consumer market, possibly leading to a new, job-producing industry for Hanford and the Tri-Cities.

For more information about the fish-rearing experiment, call Mike Berriochoa at (509) 376-5742.

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A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 4 • Number 2 Summer 1994

Y-12 Plant's Walk-In Pits Remediation Completed

In May 1994, the Department of Energy completed environmental remediation work at the Walk-in Pits, an old waste site at the Y-12 Plant in Oak Ridge, Tennessee. The Walk-in Pits was among the last areas in Y-12's Bear Creek Burial Grounds requiring action under the Resource Conservation and Recovery Act. The site was first used in the 1960's for the burial and disposal of contaminated materials and shock-sensitive chemicals, including scrap materials from the manufacture of nuclear weapons components.

According to Sherry Lankford, the Department's manager of Y-12 Environmental Restoration, a major challenge in the Walk-in Pits remediation involved establishing safety controls throughout the course of the project. "Because of the explosive nature of the waste buried at the site, access to the site was limited to protect our workers, and special equipment was used," Lankford explained. That equipment included an armor-plated bulldozer that was used to remove trees and shrubs, and to spread clay over the site.

The next step in the project involved placing a synthetic liner over the fresh clay, followed by a concrete-filled blanket to hold the liner in place. This type of cap reduces the chance of surface water mixing with the contaminants and migrating to ground water and receiving streams.

Workers constructing liner cap at the Y-12 Plant's Walk-in Pits remediation site.

In addition to remediating a contaminated waste site, the Walk-in Pits project provided another benefit by allowing the Department to significantly cut its costs on another environmental restoration project. More than 20 boxes of nonhazardous debris generated from the cleanup of Kerr Hollow Quarry, a former waste treatment site also at Y-12, were placed under the Walk-in Pits cap — an action that saved several million dollars.

For more information regarding Y-12's Walk-in Pits remediation, contact Bunny Tharpe at (615) 241-4831.

HIGHLIGHTS...

Guest Editorial by Beverly Gattis 2

Hanford's Cesium Capsule Recovery Program Begins 3

Update on Spent Nuclear Fuel Management 4

Award-Winning SEAMIST Technology Saves Time and Money 6

New Sampling Method Will Protect Savannah River Site Workers 9

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Perspectives... A continuing series of guest editorials

Guest Editorial by Beverly Gattis, President of Serious Texans Against Nuclear Dumping (STAND of Amarillo, Inc.)

The end of the Cold War marks the beginning of the difficult work to secure peace. The non-proliferation challenge is frighteningly clear: control nuclear weapons, materials, and technologies, or watch them scatter throughout the world.

However, important domestic choices are at stake as well. The actual work to dismantle warheads, securely store and stabilize all forms and residues of key nuclear materials, and finally, perhaps, dispose of them, falls under the auspices of the Department of Energy. Unfortunately, history has been a particularly harsh teacher at Department of Energy sites. From bitter experience, citizens know that doing this work will exact a price.

People at various levels of research and policymaking are concerned that citizens near Department of Energy sites will delay or even halt dismantlement, storage, or disposition. They call, often with some impatience, for citizens to support — not hinder — this urgent work for world peace. Frankly, local citizens are responding to that call with far more tolerance than it presently deserves.

Improvements in openness are gradually being made, but they are hard won, small, and based on the good will of the current administration rather than some clear change in bureaucratic structure or law. Nor is the regulatory structure, especially regarding radioactive materials, fundamentally changed. Local citizens cannot help but see how close we are to making the same mistakes in the name of urgent dismantlement as were made during the decades of production.

To avoid unnecessary risk, local citizens are looking for coordinated planning, legitimate science, and the substantive, timely information necessary to support broad public debate and participation in decisionmaking. Nothing less will do, either for the sake of the people at the sites doing the work or for the country as a whole. As we pursue world security, we are inevitably shaping our own nation. The character of the country we create while doing it is a measure of what we have learned from the past and of our democracy itself.

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in EM Progress, contact Beverley Heffernan, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-3919.

WIPP Transportation Alternatives Study

In May 1994, the Department of Energy released a study of transportation alternatives relating to the shipment of transuranic waste to the Waste Isolation Pilot Plant (WIPP), a research and development facility located in southeastern New Mexico.

The Waste Isolation Pilot Plant is designed to demonstrate the safe, permanent disposal of defense-generated transuranic waste in a repository 2150 feet below the earth's surface. The plant is expected to accept transuranic waste from 10 generator sites and storage facilities across the Nation as early as 1998. Shipments of transuranic waste to the Waste Isolation Pilot Plant and subsequent disposal operations at the facility are expected to occur over a period of 20 years.

The "Comparative Study of WIPP Transportation Alternatives" is the result of a legislative mandate (P.L. 102-579) for further study of Waste Isolation Pilot Plant transportation options. The study considers occupational and public risks and exposures, environmental impacts, emergency response capabilities, and comparative costs for the shipment of transuranic waste by rail and by truck.

Stakeholder involvement was key in the formulation and ultimate completion of this transportation study. Organizations that contributed to the Waste Isolation Pilot Plant study include the Shoshone-Bannock Tribes, the Confederated Tribes of the Umatilla Indian Reservation, and the Western Governors' Association, the Southern States Energy Board, and the Environmental Evaluation Group of New Mexico.

The Waste Isolation Pilot Plant program will continue to work closely with interested stakeholder groups to discuss and work toward finding solutions to transportation and emergency preparedness issues related to plant shipments. Stakeholder participation is part of an ongoing effort to prepare the Waste Isolation Pilot Plant facility for disposal of transuranic waste and provide a solution to our Nation's transuranic waste problem.

For more information, contact Scott Van Camp at (301) 903-7209.

Hanford's Cesium Capsule Recovery Program Begins

On May 19, 1994, the first shipment of cesium capsules from North Glenn, Colorado, was delivered to the Hanford Site in Washington, marking the start of the Department's cesium capsule recovery program. This campaign represents the resolution of a significant waste management problem and the application of advanced transportation and tracking technology.

As of early July 1994, two shipments of cesium capsules have been transported to Hanford's Waste Encapsulation and Storage Facility from a Colorado company that had used the cesium to sterilize medical equipment. A third shipment was scheduled for shipment on July 15, 1994. In all, the cesium capsule recovery program will entail the transportation of one cask of cesium capsules per month for approximately 22 months.

The capsules contain cesium chloride, a byproduct of the nuclear fuel used to produce plutonium. They were manufactured at Hanford during the late 1970's and early 1980's. The capsules were leased to commercial medical equipment irradiators, and more than 400 have been safely returned to Hanford. The last shipment prior to the current campaign was in the spring of 1991.

"Cesium is nasty stuff if not handled correctly," said Jim Portsmouth, manager of Westinghouse Traffic Operations. The cesium is in a form similar to table salt, but it nonetheless has high penetration, high radioactivity, and high-speed decay. As a result, the Department has devised an elaborate system for transporting and tracking the shipments.

Capsules containing cesium-137 are placed inside a stainless steel shipping package which, with impact limiters in place, is securely tied down to trailers for transport.

The 16 capsules in the first shipment were contained in a 16-ton steel cask that is part of the Department's Beneficial Uses Shipping System. Before being used for an actual shipment, the cask underwent analysis for accident scenarios such as jet fuel fire, 50 mile-per-hour crashes, and immersion in 30 feet of water. During shipments, Hanford uses TRANSCOM, the Department's satellite-based transportation, tracking, and communication system, to monitor the cask. Emergency response personnel along the route have received special training on the shipment of cesium, and the truck that carries the cask is equipped with TRANSCOM, a cellular phone, and a fax machine.

Hanford carefully coordinated and planned the shipments in cooperation with its stakeholders. The States of Colorado, Wyoming, Utah, Idaho, Oregon, and Washington; the Confederated Tribes of the Umatilla Indian Reservation; and the Western Governors' Association participated in developing the transportation plan, and State inspectors checked the equipment before the shipment. Ken Niles, an official from the Oregon Department of Energy, described the coordination conducted for the shipping campaign as "unprecedented."

For more information about the cesium capsule recovery program, contact Larry Romine at (509) 376-4747.

Pantex Plant Transitioning Back to Operations Mode

In June 1994, following a two-month maintenance stand-down, the Department authorized its operating contractor at the Pantex Plant in Texas to begin transitioning back into the operational mode for dismantlement of nuclear weapons. Located about 17 miles northeast of Amarillo, Texas, the Pantex Plant is the Nation's only nuclear weapons assembly and disassembly site.

The Pantex Plant's operating contractor, Mason & Hanger-Silas Mason Co., Inc., and the onsite Department of Energy manager decided to place the plant's operational facilities into a maintenance mode on April 11, 1994, following the second of two occurrences with ventilation systems in facilities where nuclear weapons are dismantled. In February 1994, a Blast Valve, designed to close and contain radioactive material in the event of a high explosive accident, failed an annual maintenance check. In March 1994, a High Efficiency Particulate Air filter, designed to filter radioactive materials in the event of an accidental

(Continued on page 4)

Update on Spent Nuclear Fuel Management

Environmental Management's Office of Spent Fuel Management is working aggressively to manage the Department's inventory of spent nuclear fuel throughout the United States and abroad. The office is now emphasizing three areas of spent nuclear fuel: national integrated spent fuel management; foreign research reactor spent nuclear fuel management; and environmental, safety, and health vulnerabilities related to spent nuclear fuel at Department facilities.

The Idaho National Engineering Laboratory Environmental Impact Statement comprises the details of national spent fuel management. A two-part draft of the Environmental Impact Statement, which was released to the public in June 1994, contains details of all spent fuel management at Department facilities in the United States. The public comment period for this draft will last until September 30, 1994, and after incorporating the final comments received, the Department will issue a final version of the document.

Volume I of the draft Environmental Impact Statement provides an analysis of the potential environmental impacts of five different alternatives for managing the approximately 2,700 tons of spent nuclear fuel at Department facilities during the next 40 years. The alternatives described in the draft Environmental Impact Statement range from leaving the spent fuel where it is currently stored or generated to centralizing all spent fuel management activities at one location in the United States. Volume II covers the environmental analysis for site-specific decisions regarding environmental restoration and waste management programs and for spent fuel management at Idaho for the next 10 years.

As for managing spent fuel located in other countries, the Department recently completed an Environmental Assessment on the Urgent Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel and issued a Finding of No Significant Impact for the proposed action. As a result, the Department will accept 409 spent fuel elements from 8 foreign research reactors starting as early as summer 1994. The spent fuel will be transported into the United States through the port of Sunny Point, North Carolina, and then transported by rail to the Savannah River Site for interim storage.

In the area of spent nuclear fuel vulnerabilities, the Department has resolved to address each vulnerability in a manner that reflects the Department's sense of urgency, concern for worker protection, commitment to mitigate environmental impacts, and need for compatible long-term solutions. The Department responded to the list of 106 vulnerabilities identified in the December 1993 Spent Nuclear Fuel Working Group . Report by first prioritizing the vulnerabilities and then proceeding to develop the Plan of Action to Resolve Spent Nuclear Fuel Vulnerabilities. This plan contains a detailed individual action plan for each vulnerability, and will be issued in three phases. Phases I and II were issued in February and April, 1994, respectively. Phase III will be issued in September 1994.

Interested parties may comment on the draft Environmental Impact Statement by telephone or fax by calling 1-800-682-5583 from 6:00 a.m. to 11:00 p.m. Mountain Daylight Time. Stakeholders may also present comments at any one of the 20 public meetings that will be held throughout the country this summer.

To comment on the Phase II Plan of Action or to obtain more information about spent nuclear fuel activities, contact John Jicha, the Director of the Office of Spent Fuel Management, at (202) 586-9441, or call the Environmental Management Information Center at 1-800-736-3282.

(Pantex Plant, continued from page 3)

radiological release, also failed an annual maintenance check.

While subsequent investigation showed that neither of these occurrences would have had a significant effect on the public or worker safety had an accident occurred, they raised questions concerning the maintenance history and control of safety systems designed to mitigate the consequences of weapon accidents. In response to the situation, Mason & Hanger management decided to review all maintenance records and implement previously planned upgrades to its facility management program.

Weapons dismantlement activity at the plant was suspended for about a month while plant officials performed a series of safety-related maintenance actions. "This was absolutely the correct action to take," said Acting DOE Area Manager Gerry Johnson. "Nothing is more important than providing a work environment that is safe for plant employees and does not pose a threat to the public or the environment. I applaud the contractor's proactive approach."

The temporary halt for maintenance work is not expected to have a major impact on the total number of weapons disassembled this year. All of the facilities have been shut down at one time or another during the year for procedure implementation and planned training of facility managers and production technicians. Weapons shipments into Pantex from the Department of Defense have been temporarily suspended.

For more information about activities at the Pantex Plant, call Tom Walton at (806) 477-3120.

Technology Development Briefs

New Partnership Formed to Increase Technology Transfer Opportunities

The Northeast Waste Management Enterprise is a new partnership formed to increase the economic, commercial, and environmental effectiveness of the waste management industries through the implementation of new technologies. The Enterprise is a distribution center for technology transfer, bringing together expertise and technologies in the Federally supported research community and the private sector. Its goal is to develop a high-tech, highly competitive waste management industry with the technologies for the Northeast's waste management problems and the Environmental Management program's five technology focus groups.

The non-profit Long Island Research Institute, which manages the Northeast Waste Management Enterprise in collaboration with Brookhaven National Laboratory, draws on its strong ties to the local business, academic, research, and financial communities. The Enterprise has identified initial technologies to focus on but does not exclude other environmental technologies from consideration. Technical and economic analyses for each program form the basis for decisions relating to field demonstration and the ultimate commercialization of the technology.

The Enterprise is fostering partnerships among local environmental firms, Brookhaven National Laboratories, and local universities doing bioremediation area. It can assist emerging public and private partnerships in the environmental industries by facilitating cooperative research activities, identifying appropriate licensees for Federally developed technologies, developing commercialization strategies, and locating appropriate sources for new ventures.

For more information, call Paul Longsworth at (301) 903-7900.

Buried Waste Technology Expo in Idaho

The objectives and preliminary results of the Buried Waste Integrated Demonstration program's 1994 field and laboratory work will be presented on August 8-11, 1994, at the Buried Waste Technology Expo in Idaho Falls, Idaho. On August 10, in conjunction with the Expo, staff from the Idaho National Engineering Laboratory's Environmental Restoration department will also be looking for private industry partners on specific projects.

The Expo is sponsored by the Department's Office of Technology Development, which oversees the Buried Waste Integrated Demonstration program. That program coordinates demonstrations of technologies for the characterization, retrieval, treatment, and stabilization of radioactive and hazardous waste.

This year's achievements within the program will be featured through tours, exhibits, displays, and presentations by representatives from the Western Governors' Association, the Environmental Protection Agency, and the Department of Energy. A panel discussion with stakeholders on risk assessment is also planned.

Department of Energy and industry technology developers, university and industry researchers, and the general public are invited to explore the many facets of the Buried Waste Integrated Demonstration program.

For more information about the Expo, contact Connie Nash at (208) 526-0223.

Soil Saw Demonstration at Savannah River Site

On February 8-15, 1994, the Department of Energy and Halliburton NUS/Brown and Root demonstrated a new, innovative waste remediation technology called the "Soil Saw" at the Savannah River Site.

The Soil Saw is a specialized construction technique that uses a modified bulldozer to excavate soil and then inject an impermeable mixture of bentonite clay, cement, and soil. This one-motion technique builds a wall that surrounds and isolates contamination, preventing ground-water migration. Because the technique is performed underground, it eliminates the hazards of spreading contamination above the ground surface.

The demonstration at the Savannah River Site is part of the Department's initiative to work with private businesses to establish new environmental cleanup technologies. In this cooperative effort, the Department's Morgantown Energy Technology Center entered into a cost-sharing contract with Halliburton NUS/Brown and Root through a Program Research and Development Announcement. This initiative is being funded by the Office of Technology Development and is supported by the Office of Environmental Restoration at Savannah River.

For more information, contact Karen Adams at (803) 725-4648

Award-Winning SEAMIST Technology Saves Time and Money

R&D Magazine awards are given annually for the hundred most significant technological developments with commercial application. The Department's Office of Technology Development, Sandia National Laboratories, and Science and Engineering Associates were awarded a coveted R&D 100 Award for their development of SEAMIST technology. SEAMIST (Science and Engineering Associates Membrane Instrumentation and Sampling Technique) is a technology commercialization success story for the Department and Science and Engineering Associates.

The SEAMIST system was developed by Science and Engineering Associates with support from Argonne National Laboratory. The system was demonstrated during a Mixed Waste Landfill Integrated Demonstration to address the Department's unsaturated zone characterization and monitoring needs. Hosted by Sandia National Laboratories for the Office of Technology Development, the purpose of the Mixed Waste Landfill Integrated Demonstration was to test innovative technologies for the cleanup of chemical and mixed waste landfills that are representative of many sites occurring throughout the complex and the Nation

The characterization and remediation technologies that were demonstrated emphasized "in situ" or "in place" remedies. Soils are not moved while the extent of contamination is being assessed, thus reducing the risk to the environment and personnel, saving time, and producing more complete pictures of what is occurring underground. SEAMIST provides a way to characterize and monitor subsurface conditions in situ by using an impermeable tubular membrane to deploy sensors and/or samplers in boreholes or to tow instruments downhole in a clean, stable borehole environment. The membrane, made of coated fabric or synthetic film, is forced from a holding canister into a borehole by air pressure from the canister, unfolding and pressing along the sides of the borehole as it is pushed down the borehole. After the data are gathered, the membrane is reeled back into the canister, inverting to its original state for reuse or disposal.

Because it can be customized to suit the needs of the user, is retrievable and reusable, and leaves the borehole clean, SEAMIST saves not only time, but also money in drilling costs, tool rehabilitation versus replacement, upgrades, and waste steam disposal. It also minimizes or eliminates problems that conventional systems experience, such as retrieval and repair of buried instrumentation, cross-contamination of samples, single-point sampling with screened wells, and borehole stability. Easily handled and transported, the SEAMIST system is ideal for field work. A small unit can fit into a trunk of a car, and installation is fast — emplacement in a 100-foot borehole can take less than 5 minutes.

Demonstrating and testing SEAMIST at the Mixed Waste Landfill Integrated Demonstration at Sandia National Laboratory not only provided essential field testing and valuable experience, but also helped to instill confidence in potential users of the technology. Transfer of this Department-developed technology to private industry assures its availability not only to the Environmental Management program, but to other Federal, State, and local governments and to the private sector. For more information about SEAMIST, call Skip Chamberlain at (301) 903-7248.

Mound Completes Waste Transfer Pipe Removal

In May 1994, the Department's Mound Facility in Miamisburg, Ohio, completed the removal of 570 linear feet of radioactive underground waste transfer piping and associated soil contaminated by past leaks.

The 3-inch diameter iron piping, which was formerly used to transfer liquid radioactive waste from a processing building to the waste disposal site, was contaminated with plutonium, tritium, and other radioisotopes. The removal job was complicated by both overhead and underground utilities that were required to remain in operation during the cleanup process.

Originally, plans were drawn to build a 450-foot retaining wall that would allow cleanup crews to safely dig areas of contaminated soil on the steep hillside to complete the project. However, EG&G Mound Applied Technologies, the maintenance and operating contractor at the Mound Facility, applied field data obtained while removing the first 150 feet of pipe to the remainder of the removal process. As a result, the need to construct the retaining wall was eliminated, thus achieving significant cost and schedule savings.

The Mound Facility performed the waste transfer pipe removal as part of its continuing decontamination and decommissioning program. This program includes a total of 4,000 linear feet of similar underground waste transfer piping.

Decontamination and decommissioning cleanup crews at Mound will turn their attention this summer to dismantling a 15,000-square-foot building that was used to process plutonium-238. The contaminated metals recovered during this project will be recycled for use within other Department of Energy facilities.

For more information regarding cleanup activities at the Mound Facility, contact Cathy Skapik at (513) 865-3380.

Early Dismantlement of Fernald Former Production Buildings Approved

The U.S. and Ohio Environmental Protection Agencies conditionally approved a Record of Decision for Interim Remedial Action for early remediation of existing structures within Operable Unit 3 of the Fernald Environmental Management Project in Ohio. This interim remedial action could accelerate cleanup of the former production area by up to four years, and it could result in a cost savings of approximately $300 million. The Record of Decision, the first for Fernald, calls for decontaminating and dismantling buildings and support facilities in advance of the final Record of Decision that will be issued by the U.S. Environmental Protection Agency in 1997 for final cleanup of Operable Unit 3.

The interim cleanup action was pursued as a result of concerns about human health and environmental risks associated with the increased potential for releases from deteriorating structures in the 136-acre production area. The approved plan provides for temporary onsite storage of the bulk rubble and debris from dismantlement activities. A determination on final disposition of rubble and debris from the interim remedial action will await the final Record of Decision for Operable Unit 3.

The Department of Energy has signed the Record of Decision for Interim Remedial Action, and the U.S. Enviromental Protection Agency is expected to sign and issue the document in mid-July 1994.

For more information, please contact Bob Walker at (513) 738-6200.

Plant 7, the Fernald Environmental Management Project site's tallest building, as it stands before dismantling.

Computer enhancement showing the Fernald production area as it will appear following dismantling and removal of Plant 7.

Dismantling of Buildings at Fernald Underway

Cleanup progress at the Fernald Environmental Management Project will become much more visible with the dismantling of Plant 7, the site's tallest building. Plant 7 is easily the most recognizable structure at Fernald, and it is also the first former production building to be torn down. The building's dismantling begins the removal of 125 structures in the former uranium production area as part of the Fernald environmental restoration mission.

Plant 7, a seven-story structure, was built in 1953 to house chemical processes that converted uranium hexafluoride to uranium tetrafluoride, also called green salt. Green salt was then reacted with magnesium to produce pure uranium metal, which in turn was used by other Department of Energy sites to produce tritium and plutonium for U.S. defense production.

The methods used in the Plant 7 dismantling process provide an effective demonstration of new technologies and recycling options that have been designed for the special radiological and asbestos conditions present at Fernald. For example, after workers moved materials and debris from the plant to alternate storage facilities at Fernald, they used a high-pressure power washer to clean the interior of the building and applied a coat of paint on interior surfaces to "lock down" any remaining loose contamination. In terms of recycling, approximately 700 tons of structural steel from Plant 7 will be fabricated into shipping containers, while other steel and concrete will be recycled for beneficial reuse.

The dismantling of Plant 7 is a Removal Action under an amended Comprehensive Environmental Response, Compensation, and Liability Act agreement between the Department of Energy and the U.S. Environmental Protection Agency. As such, it constitutes a specific cleanup action intended to reduce immediate threats to human health or the environment due to potential release of radioactive or other contamination while long-term cleanup plans are developed.

For more information concerning activities at the Fernald Environmental Management Project, please contact Bob Walker at (513) 738-6200.

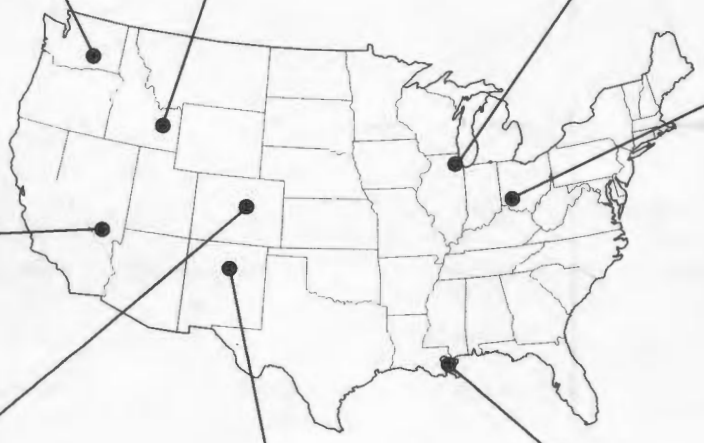
Environmental Management Snapshots

In The Field ...

Idaho National Engineering Laboratory: Under a new Memorandum of Agreement signed on January 26, 1994, between the Shoshone-Bannock Tribes and the Idaho Operations Office, Tribal members will be able to visit historical caves and other cultural and sacred sites near the Middle Butte area of the National Engineering Laboratory.

Hanford Site opened its new low-level decontamination facility on May 25, 1994. Originally built in 1959, the facility underwent extensive renovation and upgrading before the opening. Improvements included the installation of new doors, new decontamination equipment, and a new ventilation fan room. Since its opening, the decontamination facility has processed over 450 drums and 58 burial boxes of radioactive and hazardous solid waste.

Argonne National Laboratory completed six priority repairs as part of a project to rehabilitate the laboratory/sanitation sewer system at its Illinois site. The repairs were scheduled early in the project to allow sampling for potential contamination of soil above, adjacent to, and below the sewers. Results showed no significant amounts of contaminiation.



Fernald Environmental Management Project began operating its South Plume Interim Treatment System on March, 31, 1994. This system, using ion-exchange technology to treat ground water, will reduce uranium discharges from Fernald to the Great Miami River.

Nevada Test Site's Community Advisory Board for Nevada Test Site Programs held three preliminary meetings between March and May 1994 to consider organizational issues. The Community Advisory Board has received its charter and will hold meetings publicly on the first Wednesday of every month.

Rocky Flats Plant began construction of a 25,000-square-foot Centralized Waste Facility that will store containers of hazardous and low-level radioactive waste awaiting shipment to offsite licensed disposal facilities.

Albuquerque Operations Office prepared a plan to use the resources of the nine mixed waste sites it oversees to create real treatment capacity for the waste that minimizes time and cost. The plan defines an activity for each selected treatment option, assigns a site as project manager for that activity, defines responsibilities, and establishes a short-term schedule for initial activities.

Tulane and Xavier Universities were awarded a $23 million 2-year cooperative agreement to prepare an evaluation of risks to the public health and safety posed by conditions at weapons complex facilities that are addressed by compliance agreement requirements or Environmental Management use in preparing a report to Congress. As part of this effort, university representatives are planning to visit Oak Ridge, Rocky Flats, Hanford, Idaho, Fernald, Mound, and Savannah River this summer.

New Sampling Method Will Protect Savannah River Site Workers

The Westinghouse Savannah River Company's Environmental Restoration department and the Savannah River Site are using an innovative environmental sampling system to collect soil samples from the site's contaminated seepage basins. This remote sampling device is designed to reduce the potential exposure risk to workers who collect these samples for analysis to identify contaminants and determine the appropriate cleanup action for the site.

Prior to the development of the remote sampling technology, engineers used a barge equipped with a drill rig to float on the basin and extract samples. The old method was effective but required engineers to perform operations from within the basin where they were exposed to the hazardous and radioactive contaminants. Also, the barge, which came in contact with basin water, could only be used once before it was disposed of as contaminated waste.

The remote sampler eliminates the need for a barge because it allows operators to conduct sampling operations from the bank of the seepage basin. In the new method, a remote sampler is attached to the arm of a telescoping crane, maneuvered above the basin water, and inserted into the basin's soil to collect the sample.

The benefits of using remote equipment are significant. Engineers can distance themselves from contamination and greatly reduce the risk of exposure. Generation of waste is reduced because remote sampling eliminates the need to use and contaminate the barge and drill rig, thereby reducing or eliminating costs associated with disposing of and replacing the equipment. Remote sampling also enhances worker safety and saves tax dollars. According to Brian Hennessey, an environmental scientist at Savannah River, "the demonstration is part of an aggressive effort by Savannah River to reduce the risks and costs associated with the site's environmental restoration mission. The bottom line is a process that is safer and faster and more cost-efficient than earlier methods of characterizing our seepage basins." For more information, contact Karen Adams at (803) 725-4648.

The Savannah River Site's remote environmental sampling system that conducts operations from the banks of the seepage basin, greatly reducing the risk of worker exposure to contamination.

Innovative Scoping Process at Savannah River Site

In a continuing effort to listen and meaningfully respond to stakeholders' concerns, the Savannah River Operations Office in South Carolina recently addressed public criticism that too many formal meetings, contributing to costs, were being proposed. In response to the criticism, Savannah River combined the separate informational workshops and scoping meetings originally planned on three different site-related Environmental Impact Statements — the Waste Management, Interim Management of Nuclear Materials, and Defense Waste Processing Facility Supplement Environmental Impact Statements.

Held in April 1994, the informational workshops opened with a general overview and offered a videotape presentation that explained all three Environmental Impact Statements. Afterward, citizens were able to view displays, read information, discuss concerns, and ask questions of technical experts in break-out rooms available for each Environmental Impact Statement.

Response and comments on the less formal and more interactive workshops were so positive that Savannah River applied the new approach to scoping hearings held in May 1994. Small tables, seating six to eight people, were set up around the hearing room, allowing stakeholders to make statements from their seats or from a small side table outfitted with a microphone. This provided an atmosphere that made participating stakeholders feel more involved in the process and eager to take part in the proceedings. Those individuals desiring more information were provided with break-out rooms where Savannah River Site representatives provided answers to specific questions. The majority of participants complimented the new format and felt the effort was a step in the right direction.

For more information on the planning and execution of these joint meetings or specifics of the Waste Management, Interim Management of Nuclear Materials, or Defense Waste Processing Facility Supplemental Environmental Impact Statements at the Savannah River Site, contact Julie Peterson at (803) 725-1288.

Department Receives Mixed Reviews at Hanford Summit II

On June 16, 1994, Energy Secretary Hazel O'Leary kicked off Hanford Summit II, the second meeting held to address balanced long-term environmental and economic sustainability in the Hanford region in Washington. The Secretary stressed President Clinton's commitment to cleaning up the Hanford Site and cited as evidence the increasing level of funding dedicated to the effort, which has grown from $238 million in fiscal year 1989 to an estimated $1.7 billion in fiscal year 1995.

In her opening remarks, the Secretary asked Summit participants to provide constructive criticism and grade the Department on its efforts to meet commitments she made at the first Hanford Summit. Participants included representatives from labor, Indian Tribes, public interest groups, local government, the Hanford Advisory Board, and the State of Oregon.

Stakeholders at the Summit gave the Department both praise and criticism for its performance in cleaning up the Hanford Site and dealing with public concerns. Although the Secretary's new initiatives at openness won high marks, stakeholders gave Hanford officials an unfavorable review for what they see as a lack of field office support for the Secretary's initiatives.

O'Leary endorsed the conference initiatives that were proposed by working groups set up before the Summit began. These initiatives are awaiting further review by Tribal leaders, who have 45 days to pen the endorsement.

As the Summit closed, late afternoon Thursday, the majority of participants were pleased with the outcome and hoped that the Summit would serve as the next building block toward cleaning up the Hanford Site. For more information on Hanford Summit II, contact Dave Dillman at (509) 372-1082.

Stakeholders and Regulators Participate in the Hanford Site's FY 1996 Activity Data Sheet (ADS) Development Process

During the past few months, Hanford's regulators and stakeholders have taken an active part in developing the Richland Operations Office Fiscal Year 1996 planning year budget. This participation includes involvement in the process to develop Hanford's Activity Data Sheets, the basic planning and budget tool that describes the activities included in the Environmental Management program.

Hanford officials met with regulators and stakeholders in two parallel series of activities, received their comments on the budget, and incorporated their input. The officials then convened a Senior Management Team that refined the Hanford budget proposal according to stakeholders' views and comments. Using the requirements in the new Hanford Federal Facility Agreement and Consent Order (or Tri-Party Agreement) and the recommendations of the Keystone dialogue as guidelines, Hanford's initiative to involve stakeholder and regulator involvement has strengthened its budget proposal and improved understanding and teamwork among the parties.

To start the process of involving its regulators, the Richland Operations Office held training sessions, briefings, and working meetings with representatives of the Washington State Department of Ecology and Environmental Protection Agency Region 10. Through these activities, regulators were able to review and help revise the proposed priority list. The regulators' participation in the development of the Hanford budget proposal served to strengthen that proposal and to improve understanding and teamwork. Plans are being formulated for ways to improve the quality and efficiency of this process for the next cycle.

Stakeholders were also given an opportunity to have their views considered in the Activity Data Sheet development process. To facilitiate this participation, the Richland staff first considered the recommendations of the Hanford Future Site Uses Working Group and the Hanford Tank Waste Task Force while developing its original draft budget. Next, during March 1994, the operations office held public meetings in Oregon and Washington to provide stakeholders and the public with information on the President's Fiscal Year 1995 budget proposal and to solicit their views concerning the priorities for the Fiscal Year 1996 budget. These meetings were held early in the budget process to ensure the time to incorporate stakeholders' input into the Activity Data Sheets before submitting them to Headquarters.

During the public meetings, Richland representatives committed to provide the public with updates on the President's FY 1995 budget as revisions occur, to hold a series of meetings during November and December 1994 to report on actual performance during the completed 1994 fiscal year, and to arrange another series of these meetings during spring 1995 to discuss the President's FY 1996 budget proposal and the priorities for the FY 1997 proposal.

Currently, Hanford officials are planning ways to improve the quality of stakeholder involvement for the next budget cycle. By identifying potential improvements and revising the process of budget review, Hanford can provide its stakeholders with the opportunity for a more meaningful role in budget development, and Hanford can develop a more solid budget. For more information, contact Jim Peterson at (509) 376-6731.

Streamlined Characterization Begun at Palos Forest Preserve

Bechtel National, Inc., performing work for the Department's Chicago Operations Office, has initiated site characterization activities at the Palos Forest Preserve site, located approximately 20 miles from downtown Chicago.

Site characterization began in May 1994, using an expedited site characterization approach designed to obtain analytical data faster and more efficiently, with less intrusive work and at lower costs than traditional characterization (refer to the "Streamlining Characterization" article on page 7 of *EM Progress*, Volume 3, Number 2, Summer 1993).

The expedited or observational approach being used relies on rapid turnaround of sample analyses from a close support laboratory and integration of the results with previously collected data to direct further sampling efforts. Biased samples from the areas of suspected contamination are analyzed using the local support lab, which can provide results to onsite technical staff in 1, 3, 7 or 14 days. This rapid turnaround of data facilitates determination of the nature and extent of contamination by allowing multiple sampling rounds to be performed in a local area in one field season.

In support of the expedited site characterization approach, non-intrusive investigations were performed to help define surface and shallow subsurface features. These investigations included a civil survey, historic photography analysis, detail surface features mapping, radiological walkover, and geophysical surveys.

Intrusive work began in June 1994 when drilling and geoprobe operations moved onto the site. Monitoring wells will be installed at selected locations onsite that will compliment the monitoring network installed by Argonne National Laboratory immediately surrounding the site. Geoprobe sampling equipment will be used to install temporary well points that will be used to determine groundwater flow directions and gradients. The hydraulic push geoprobe equipment will also be used in suspected contaminated areas to obtain samples while generating little to no investigation-derived waste.

The site investigation is expected to be completed by October 1994, and the Site Characterization Report will be submitted in early 1995. The Palos Forest Preserve site will then be in a maintenance mode with interim actions scheduled to start in the spring of 1995.

For more information regarding these activities, contact Jay Hunze at (708) 252-2428.

Development of FFCA Mixed Waste Treatment Plans Continues

In compliance with the Federal Facility Compliance Act, the Department is developing Site Treatment Plans for each of the 48 sites in 22 States that are currently generating or storing mixed waste, or are expected to do so in the near future. The Act directs the Department to prepare a Site Treatment Plan for each site specifying a strategy for developing mixed waste treatment capacities and technologies. The Plans must be submitted to the State or the U.S. Environmental Protection Agency for approval.

The Department is following a three-step process that includes the issuance of Conceptual, Draft, and Final Proposed Site Treatment Plans. This will be followed by the issuance of compliance orders by October 1995 to implement the approved Plan. The Conceptual Plans, released in October 1993, outlined a range of possible options for mixed waste treatment. The 48 sites are now in the final stages of preparing Draft Site Treatment Plans that will be released in August 1994.

The Department has worked closely with the State and Environmental Protection Agency regulators through the National Governors' Association to define the process for developing these Plans. The Draft Plans will identify, to the extent possible, the preferred option for the treatment of each waste. The Draft Plans were prepared using the "bottoms-up" approach and have not been completely evaluated for potential impacts to other Department sites and the overall Department program. These preferred options may change as evaluation of complex-wide impacts and State-to-State discussions progress.

Although not required by the Federal Facility Compliance Act, the Department has agreed to address disposal issues in this process. The Department and the States have formed a working group to address disposal, developing a process to evaluate the sites that generate or store mixed waste (or will do so within the next five years) to determine their suitability for waste disposal. Additionally, the Department and the States are working together to determine a small group of sites that will undergo detailed performance evaluations. A description of this process will be incorporated into the Draft Plans.

As the Site Treatment Plans are developed, public involvement in the process will increase. The primary public involvement opportunities will be focused at the Department site level. However, these efforts will be supplemented at the national level with mailed information, an informal Federal Facility Compliance Act open house in Washington, D.C., during August 1994, and possibly other activities. In addition, a *Federal Register* notice will announce the availability of the Draft Plans at Department of Energy Reading Rooms for public review and comment.

For more information on any of these activities, please contact the Center for Environmental Management Information Center at 1-800-736-3282.

DOE Benchmarking Initiative Wins Award

The American Productivity and Quality Center recently awarded the Department of Energy's Office of Environmental Management a bronze distinguished achievement award for its Benchmarking for Cost Improvement Initiative. Fourteen individual benchmarking studies were submitted to the Center for consideration in this year's awards, and the Department's entry was one of five winning studies announced. Award recipients presented their study at the June annual American Productivity and Quality Center Benchmarking Conference in Chicago, Illinois.

The Center's benchmarking study award promotes, encourages, and recognizes excellence in the execution of a benchmarking study. Applications were evaluated by an independent panel of recognized experts and leading practitioners of benchmarking. The award process included an evaluation of planning, information collection, data analysis and results, and improvements.

For more information on the Department's Benchmarking for Cost Improvement Initiative, contact Stephen Meador at (301) 903-7422.

Comments

We are interested in receiving your comments—what you like and what you don't like—about *EM Progress*. Your views, comments, and suggestions are appreciated.

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A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

Volume 4 • Number 2 Summer 1994

Y-12 Plant's Walk-In Pits Remediation Completed

In May 1994, the Department of Energy completed environmental remediation work at the Walk-in Pits, an old waste site at the Y-12 Plant in Oak Ridge, Tennessee. The Walk-in Pits was among the last areas in Y-12's Bear Creek Burial Grounds requiring action under the Resource Conservation and Recovery Act. The site was first used in the 1960's for the burial and disposal of contaminated materials and shock-sensitive chemicals, including scrap materials from the manufacture of nuclear weapons components.

According to Sherry Lankford, the Department's manager of Y-12 Environmental Restoration, a major challenge in the Walk-in Pits remediation involved establishing safety controls throughout the course of the project. "Because of the explosive nature of the waste buried at the site, access to the site was limited to protect our workers, and special equipment was used," Lankford explained. That equipment included an armor-plated bulldozer that was used to remove trees and shrubs, and to spread clay over the site.

The next step in the project involved placing a synthetic liner over the fresh clay, followed by a concrete-filled blanket to hold the liner in place. This type of cap reduces the chance of surface water mixing with the contaminants and migrating to ground water and receiving streams.

Workers constructing liner cap at the Y-12 Plant's Walk-in Pits remediation site.

In addition to remediating a contaminated waste site, the Walk-in Pits project provided another benefit by allowing the Department to significantly cut its costs on another environmental restoration project. More than 20 boxes of nonhazardous debris generated from the cleanup of Kerr Hollow Quarry, a former waste treatment site also at Y-12, were placed under the Walk-in Pits cap — an action that saved several million dollars.

For more information regarding Y-12's Walk-in Pits remediation, contact Bunny Tharpe at (615) 241-4831.

HIGHLIGHTS...

Guest Editorial by Beverly Gattis 2

Hanford's Cesium Capsule Recovery Program Begins 3

Update on Spent Nuclear Fuel Management 4

Award-Winning SEAMIST Technology Saves Time and Money 6

New Sampling Method Will Protect Savannah River Site Workers 9

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Perspectives... A continuing series of guest editorials

Guest Editorial by Beverly Gattis, President of Serious Texans Against Nuclear Dumping (STAND of Amarillo, Inc.)

The end of the Cold War marks the beginning of the difficult work to secure peace. The non-proliferation challenge is frighteningly clear: control nuclear weapons, materials, and technologies, or watch them scatter throughout the world.

However, important domestic choices are at stake as well. The actual work to dismantle warheads, securely store and stabilize all forms and residues of key nuclear materials, and finally, perhaps, dispose of them, falls under the auspices of the Department of Energy. Unfortunately, history has been a particularly harsh teacher at Department of Energy sites. From bitter experience, citizens know that doing this work will exact a price.

People at various levels of research and policymaking are concerned that citizens near Department of Energy sites will delay or even halt dismantlement, storage, or disposition. They call, often with some impatience, for citizens to support — not hinder — this urgent work for world peace. Frankly, local citizens are responding to that call with far more tolerance than it presently deserves.

Improvements in openness are gradually being made, but they are hard won, small, and based on the good will of the current administration rather than some clear change in bureaucratic structure or law. Nor is the regulatory structure, especially regarding radioactive materials, fundamentally changed. Local citizens cannot help but see how close we are to making the same mistakes in the name of urgent dismantlement as were made during the decades of production.

To avoid unnecessary risk, local citizens are looking for coordinated planning, legitimate science, and the substantive, timely information necessary to support broad public debate and participation in decisionmaking. Nothing less will do, either for the sake of the people at the sites doing the work or for the country as a whole. As we pursue world security, we are inevitably shaping our own nation. The character of the country we create while doing it is a measure of what we have learned from the past and of our democracy itself.

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in EM Progress, contact Beverley Heffernan, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-3919.

WIPP Transportation Alternatives Study

In May 1994, the Department of Energy released a study of transportation alternatives relating to the shipment of transuranic waste to the Waste Isolation Pilot Plant (WIPP), a research and development facility located in southeastern New Mexico.

The Waste Isolation Pilot Plant is designed to demonstrate the safe, permanent disposal of defense-generated transuranic waste in a repository 2150 feet below the earth's surface. The plant is expected to accept transuranic waste from 10 generator sites and storage facilities across the Nation as early as 1998. Shipments of transuranic waste to the Waste Isolation Pilot Plant and subsequent disposal operations at the facility are expected to occur over a period of 20 years.

The "Comparative Study of WIPP Transportation Alternatives" is the result of a legislative mandate (P.L. 102-579) for further study of Waste Isolation Pilot Plant transportation options. The study considers occupational and public risks and exposures, environmental impacts, emergency response capabilities, and comparative costs for the shipment of transuranic waste by rail and by truck.

Stakeholder involvement was key in the formulation and ultimate completion of this transportation study. Organizations that contributed to the Waste Isolation Pilot Plant study include the Shoshone-Bannock Tribes, the Confederated Tribes of the Umatilla Indian Reservation, and the Western Governors' Association, the Southern States Energy Board, and the Environmental Evaluation Group of New Mexico.

The Waste Isolation Pilot Plant program will continue to work closely with interested stakeholder groups to discuss and work toward finding solutions to transportation and emergency preparedness issues related to plant shipments. Stakeholder participation is part of an ongoing effort to prepare the Waste Isolation Pilot Plant facility for disposal of transuranic waste and provide a solution to our Nation's transuranic waste problem.

For more information, contact Scott Van Camp at (301) 903-7209.

Hanford's Cesium Capsule Recovery Program Begins

On May 19, 1994, the first shipment of cesium capsules from North Glenn, Colorado, was delivered to the Hanford Site in Washington, marking the start of the Department's cesium capsule recovery program. This campaign represents the resolution of a significant waste management problem and the application of advanced transportation and tracking technology.

As of early July 1994, two shipments of cesium capsules have been transported to Hanford's Waste Encapsulation and Storage Facility from a Colorado company that had used the cesium to sterilize medical equipment. A third shipment was scheduled for shipment on July 15, 1994. In all, the cesium capsule recovery program will entail the transportation of one cask of cesium capsules per month for approximately 22 months.

The capsules contain cesium chloride, a byproduct of the nuclear fuel used to produce plutonium. They were manufactured at Hanford during the late 1970's and early 1980's. The capsules were leased to commercial medical equipment irradiators, and more than 400 have been safely returned to Hanford. The last shipment prior to the current campaign was in the spring of 1991.

"Cesium is nasty stuff if not handled correctly," said Jim Portsmouth, manager of Westinghouse Traffic Operations. The cesium is in a form similar to table salt, but it nonetheless has high penetration, high radioactivity, and high-speed decay. As a result, the Department has devised an elaborate system for transporting and tracking the shipments.

Capsules containing cesium-137 are placed inside a stainless steel shipping package which, with impact limiters in place, is securely tied down to trailers for transport.

The 16 capsules in the first shipment were contained in a 16-ton steel cask that is part of the Department's Beneficial Uses Shipping System. Before being used for an actual shipment, the cask underwent analysis for accident scenarios such as jet fuel fire, 50 mile-per-hour crashes, and immersion in 30 feet of water. During shipments, Hanford uses TRANSCOM, the Department's satellite-based transportation, tracking, and communication system, to monitor the cask. Emergency response personnel along the route have received special training on the shipment of cesium, and the truck that carries the cask is equipped with TRANSCOM, a cellular phone, and a fax machine.

Hanford carefully coordinated and planned the shipments in cooperation with its stakeholders. The States of Colorado, Wyoming, Utah, Idaho, Oregon, and Washington; the Confederated Tribes of the Umatilla Indian Reservation; and the Western Governors' Association participated in developing the transportation plan, and State inspectors checked the equipment before the shipment. Ken Niles, an official from the Oregon Department of Energy, described the coordination conducted for the shipping campaign as "unprecedented."

For more information about the cesium capsule recovery program, contact Larry Romine at (509) 376-4747.

Pantex Plant Transitioning Back to Operations Mode

In June 1994, following a two-month maintenance stand-down, the Department authorized its operating contractor at the Pantex Plant in Texas to begin transitioning back into the operational mode for dismantlement of nuclear weapons. Located about 17 miles northeast of Amarillo, Texas, the Pantex Plant is the Nation's only nuclear weapons assembly and disassembly site.

The Pantex Plant's operating contractor, Mason & Hanger-Silas Mason Co., Inc., and the onsite Department of Energy manager decided to place the plant's operational facilities into a maintenance mode on April 11, 1994, following the second of two occurrences with ventilation systems in facilities where nuclear weapons are dismantled. In February 1994, a Blast Valve, designed to close and contain radioactive material in the event of a high explosive accident, failed an annual maintenance check. In March 1994, a High Efficiency Particulate Air filter, designed to filter radioactive materials in the event of an accidental

(Continued on page 4)

Update on Spent Nuclear Fuel Management

Environmental Management's Office of Spent Fuel Management is working aggressively to manage the Department's inventory of spent nuclear fuel throughout the United States and abroad. The office is now emphasizing three areas of spent nuclear fuel: national integrated spent fuel management; foreign research reactor spent nuclear fuel management; and environmental, safety, and health vulnerabilities related to spent nuclear fuel at Department facilities.

The Idaho National Engineering Laboratory Environmental Impact Statement comprises the details of national spent fuel management. A two-part draft of the Environmental Impact Statement, which was released to the public in June 1994, contains details of all spent fuel management at Department facilities in the United States. The public comment period for this draft will last until September 30, 1994, and after incorporating the final comments received, the Department will issue a final version of the document.

Volume I of the draft Environmental Impact Statement provides an analysis of the potential environmental impacts of five different alternatives for managing the approximately 2,700 tons of spent nuclear fuel at Department facilities during the next 40 years. The alternatives described in the draft Environmental Impact Statement range from leaving the spent fuel where it is currently stored or generated to centralizing all spent fuel management activities at one location in the United States. Volume II covers the environmental analysis for site-specific decisions regarding environmental restoration and waste management programs and for spent fuel management at Idaho for the next 10 years.

As for managing spent fuel located in other countries, the Department recently completed an Environmental Assessment on the Urgent Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel and issued a Finding of No Significant Impact for the proposed action. As a result, the Department will accept 409 spent fuel elements from 8 foreign research reactors starting as early as summer 1994. The spent fuel will be transported into the United States through the port of Sunny Point, North Carolina, and then transported by rail to the Savannah River Site for interim storage.

In the area of spent nuclear fuel vulnerabilities, the Department has resolved to address each vulnerability in a manner that reflects the Department's sense of urgency, concern for worker protection, commitment to mitigate environmental impacts, and need for compatible long-term solutions. The Department responded to the list of 106 vulnerabilities identified in the December 1993 Spent Nuclear Fuel Working Group . Report by first prioritizing the vulnerabilities and then proceeding to develop the Plan of Action to Resolve Spent Nuclear Fuel Vulnerabilities. This plan contains a detailed individual action plan for each vulnerability, and will be issued in three phases. Phases I and II were issued in February and April, 1994, respectively. Phase III will be issued in September 1994.

Interested parties may comment on the draft Environmental Impact Statement by telephone or fax by calling 1-800-682-5583 from 6:00 a.m. to 11:00 p.m. Mountain Daylight Time. Stakeholders may also present comments at any one of the 20 public meetings that will be held throughout the country this summer.

To comment on the Phase II Plan of Action or to obtain more information about spent nuclear fuel activities, contact John Jicha, the Director of the Office of Spent Fuel Management, at (202) 586-9441, or call the Environmental Management Information Center at 1-800-736-3282.

(Pantex Plant, continued from page 3)

radiological release, also failed an annual maintenance check.

While subsequent investigation showed that neither of these occurrences would have had a significant effect on the public or worker safety had an accident occurred, they raised questions concerning the maintenance history and control of safety systems designed to mitigate the consequences of weapon accidents. In response to the situation, Mason & Hanger management decided to review all maintenance records and implement previously planned upgrades to its facility management program.

Weapons dismantlement activity at the plant was suspended for about a month while plant officials performed a series of safety-related maintenance actions. "This was absolutely the correct action to take," said Acting DOE Area Manager Gerry Johnson. "Nothing is more important than providing a work environment that is safe for plant employees and does not pose a threat to the public or the environment. I applaud the contractor's proactive approach."

The temporary halt for maintenance work is not expected to have a major impact on the total number of weapons disassembled this year. All of the facilities have been shut down at one time or another during the year for procedure implementation and planned training of facility managers and production technicians. Weapons shipments into Pantex from the Department of Defense have been temporarily suspended.

For more information about activities at the Pantex Plant, call Tom Walton at (806) 477-3120.

Technology Development Briefs

New Partnership Formed to Increase Technology Transfer Opportunities

The Northeast Waste Management Enterprise is a new partnership formed to increase the economic, commercial, and environmental effectiveness of the waste management industries through the implementation of new technologies. The Enterprise is a distribution center for technology transfer, bringing together expertise and technologies in the Federally supported research community and the private sector. Its goal is to develop a high-tech, highly competitive waste management industry with the technologies for the Northeast's waste management problems and the Environmental Management program's five technology focus groups.

The non-profit Long Island Research Institute, which manages the Northeast Waste Management Enterprise in collaboration with Brookhaven National Laboratory, draws on its strong ties to the local business, academic, research, and financial communities. The Enterprise has identified initial technologies to focus on but does not exclude other environmental technologies from consideration. Technical and economic analyses for each program form the basis for decisions relating to field demonstration and the ultimate commercialization of the technology.

The Enterprise is fostering partnerships among local environmental firms, Brookhaven National Laboratories, and local universities doing bioremediation area. It can assist emerging public and private partnerships in the environmental industries by facilitating cooperative research activities, identifying appropriate licensees for Federally developed technologies, developing commercialization strategies, and locating appropriate sources for new ventures.

For more information, call Paul Longsworth at (301) 903-7900.

Buried Waste Technology Expo in Idaho

The objectives and preliminary results of the Buried Waste Integrated Demonstration program's 1994 field and laboratory work will be presented on August 8-11, 1994, at the Buried Waste Technology Expo in Idaho Falls, Idaho. On August 10, in conjunction with the Expo, staff from the Idaho National Engineering Laboratory's Environmental Restoration department will also be looking for private industry partners on specific projects.

The Expo is sponsored by the Department's Office of Technology Development, which oversees the Buried Waste Integrated Demonstration program. That program coordinates demonstrations of technologies for the characterization, retrieval, treatment, and stabilization of radioactive and hazardous waste.

This year's achievements within the program will be featured through tours, exhibits, displays, and presentations by representatives from the Western Governors' Association, the Environmental Protection Agency, and the Department of Energy. A panel discussion with stakeholders on risk assessment is also planned.

Department of Energy and industry technology developers, university and industry researchers, and the general public are invited to explore the many facets of the Buried Waste Integrated Demonstration program.

For more information about the Expo, contact Connie Nash at (208) 526-0223.

Soil Saw Demonstration at Savannah River Site

On February 8-15, 1994, the Department of Energy and Halliburton NUS/Brown and Root demonstrated a new, innovative waste remediation technology called the "Soil Saw" at the Savannah River Site.

The Soil Saw is a specialized construction technique that uses a modified bulldozer to excavate soil and then inject an impermeable mixture of bentonite clay, cement, and soil. This one-motion technique builds a wall that surrounds and isolates contamination, preventing ground-water migration. Because the technique is performed underground, it eliminates the hazards of spreading contamination above the ground surface.

The demonstration at the Savannah River Site is part of the Department's initiative to work with private businesses to establish new environmental cleanup technologies. In this cooperative effort, the Department's Morgantown Energy Technology Center entered into a cost-sharing contract with Halliburton NUS/Brown and Root through a Program Research and Development Announcement. This initiative is being funded by the Office of Technology Development and is supported by the Office of Environmental Restoration at Savannah River.

For more information, contact Karen Adams at (803) 725-4648

Award-Winning SEAMIST Technology Saves Time and Money

R&D Magazine awards are given annually for the hundred most significant technological developments with commercial application. The Department's Office of Technology Development, Sandia National Laboratories, and Science and Engineering Associates were awarded a coveted R&D 100 Award for their development of SEAMIST technology. SEAMIST (Science and Engineering Associates Membrane Instrumentation and Sampling Technique) is a technology commercialization success story for the Department and Science and Engineering Associates.

The SEAMIST system was developed by Science and Engineering Associates with support from Argonne National Laboratory. The system was demonstrated during a Mixed Waste Landfill Integrated Demonstration to address the Department's unsaturated zone characterization and monitoring needs. Hosted by Sandia National Laboratories for the Office of Technology Development, the purpose of the Mixed Waste Landfill Integrated Demonstration was to test innovative technologies for the cleanup of chemical and mixed waste landfills that are representative of many sites occurring throughout the complex and the Nation

The characterization and remediation technologies that were demonstrated emphasized "in situ" or "in place" remedies. Soils are not moved while the extent of contamination is being assessed, thus reducing the risk to the environment and personnel, saving time, and producing more complete pictures of what is occurring underground. SEAMIST provides a way to characterize and monitor subsurface conditions in situ by using an impermeable tubular membrane to deploy sensors and/or samplers in boreholes or to tow instruments downhole in a clean, stable borehole environment. The membrane, made of coated fabric or synthetic film, is forced from a holding canister into a borehole by air pressure from the canister, unfolding and pressing along the sides of the borehole as it is pushed down the borehole. After the data are gathered, the membrane is reeled back into the canister, inverting to its original state for reuse or disposal.

Because it can be customized to suit the needs of the user, is retrievable and reusable, and leaves the borehole clean, SEAMIST saves not only time, but also money in drilling costs, tool rehabilitation versus replacement, upgrades, and waste steam disposal. It also minimizes or eliminates problems that conventional systems experience, such as retrieval and repair of buried instrumentation, cross-contamination of samples, single-point sampling with screened wells, and borehole stability. Easily handled and transported, the SEAMIST system is ideal for field work. A small unit can fit into a trunk of a car, and installation is fast — emplacement in a 100-foot borehole can take less than 5 minutes.

Demonstrating and testing SEAMIST at the Mixed Waste Landfill Integrated Demonstration at Sandia National Laboratory not only provided essential field testing and valuable experience, but also helped to instill confidence in potential users of the technology. Transfer of this Department-developed technology to private industry assures its availability not only to the Environmental Management program, but to other Federal, State, and local governments and to the private sector. For more information about SEAMIST, call Skip Chamberlain at (301) 903-7248.

Mound Completes Waste Transfer Pipe Removal

In May 1994, the Department's Mound Facility in Miamisburg, Ohio, completed the removal of 570 linear feet of radioactive underground waste transfer piping and associated soil contaminated by past leaks.

The 3-inch diameter iron piping, which was formerly used to transfer liquid radioactive waste from a processing building to the waste disposal site, was contaminated with plutonium, tritium, and other radioisotopes. The removal job was complicated by both overhead and underground utilities that were required to remain in operation during the cleanup process.

Originally, plans were drawn to build a 450-foot retaining wall that would allow cleanup crews to safely dig areas of contaminated soil on the steep hillside to complete the project. However, EG&G Mound Applied Technologies, the maintenance and operating contractor at the Mound Facility, applied field data obtained while removing the first 150 feet of pipe to the remainder of the removal process. As a result, the need to construct the retaining wall was eliminated, thus achieving significant cost and schedule savings.

The Mound Facility performed the waste transfer pipe removal as part of its continuing decontamination and decommissioning program. This program includes a total of 4,000 linear feet of similar underground waste transfer piping.

Decontamination and decommissioning cleanup crews at Mound will turn their attention this summer to dismantling a 15,000-square-foot building that was used to process plutonium-238. The contaminated metals recovered during this project will be recycled for use within other Department of Energy facilities.

For more information regarding cleanup activities at the Mound Facility, contact Cathy Skapik at (513) 865-3380.

Early Dismantlement of Fernald Former Production Buildings Approved

The U.S. and Ohio Environmental Protection Agencies conditionally approved a Record of Decision for Interim Remedial Action for early remediation of existing structures within Operable Unit 3 of the Fernald Environmental Management Project in Ohio. This interim remedial action could accelerate cleanup of the former production area by up to four years, and it could result in a cost savings of approximately $300 million. The Record of Decision, the first for Fernald, calls for decontaminating and dismantling buildings and support facilities in advance of the final Record of Decision that will be issued by the U.S. Environmental Protection Agency in 1997 for final cleanup of Operable Unit 3.

The interim cleanup action was pursued as a result of concerns about human health and environmental risks associated with the increased potential for releases from deteriorating structures in the 136-acre production area. The approved plan provides for temporary onsite storage of the bulk rubble and debris from dismantlement activities. A determination on final disposition of rubble and debris from the interim remedial action will await the final Record of Decision for Operable Unit 3.

The Department of Energy has signed the Record of Decision for Interim Remedial Action, and the U.S. Enviromental Protection Agency is expected to sign and issue the document in mid-July 1994.

For more information, please contact Bob Walker at (513) 738-6200.

Plant 7, the Fernald Environmental Management Project site's tallest building, as it stands before dismantling.

Computer enhancement showing the Fernald production area as it will appear following dismantling and removal of Plant 7.

Dismantling of Buildings at Fernald Underway

Cleanup progress at the Fernald Environmental Management Project will become much more visible with the dismantling of Plant 7, the site's tallest building. Plant 7 is easily the most recognizable structure at Fernald, and it is also the first former production building to be torn down. The building's dismantling begins the removal of 125 structures in the former uranium production area as part of the Fernald environmental restoration mission.

Plant 7, a seven-story structure, was built in 1953 to house chemical processes that converted uranium hexafluoride to uranium tetrafluoride, also called green salt. Green salt was then reacted with magnesium to produce pure uranium metal, which in turn was used by other Department of Energy sites to produce tritium and plutonium for U.S. defense production.

The methods used in the Plant 7 dismantling process provide an effective demonstration of new technologies and recycling options that have been designed for the special radiological and asbestos conditions present at Fernald. For example, after workers moved materials and debris from the plant to alternate storage facilities at Fernald, they used a high-pressure power washer to clean the interior of the building and applied a coat of paint on interior surfaces to "lock down" any remaining loose contamination. In terms of recycling, approximately 700 tons of structural steel from Plant 7 will be fabricated into shipping containers, while other steel and concrete will be recycled for beneficial reuse.

The dismantling of Plant 7 is a Removal Action under an amended Comprehensive Environmental Response, Compensation, and Liability Act agreement between the Department of Energy and the U.S. Environmental Protection Agency. As such, it constitutes a specific cleanup action intended to reduce immediate threats to human health or the environment due to potential release of radioactive or other contamination while long-term cleanup plans are developed.

For more information concerning activities at the Fernald Environmental Management Project, please contact Bob Walker at (513) 738-6200.

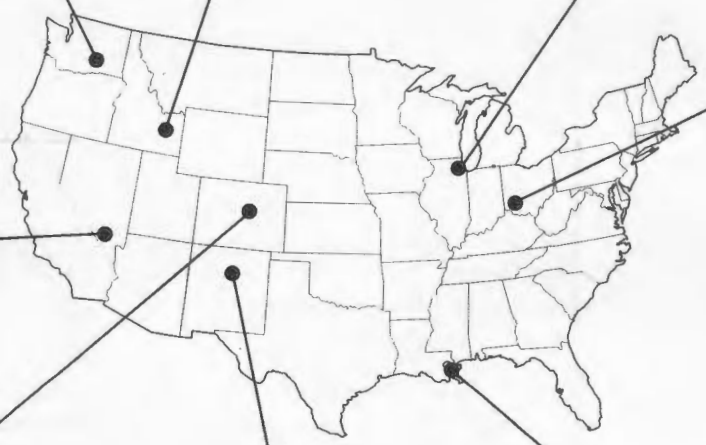
Environmental Management Snapshots

In The Field ...

Idaho National Engineering Laboratory: Under a new Memorandum of Agreement signed on January 26, 1994, between the Shoshone-Bannock Tribes and the Idaho Operations Office, Tribal members will be able to visit historical caves and other cultural and sacred sites near the Middle Butte area of the National Engineering Laboratory.

Hanford Site opened its new low-level decontamination facility on May 25, 1994. Originally built in 1959, the facility underwent extensive renovation and upgrading before the opening. Improvements included the installation of new doors, new decontamination equipment, and a new ventilation fan room. Since its opening, the decontamination facility has processed over 450 drums and 58 burial boxes of radioactive and hazardous solid waste.

Argonne National Laboratory completed six priority repairs as part of a project to rehabilitate the laboratory/sanitation sewer system at its Illinois site. The repairs were scheduled early in the project to allow sampling for potential contamination of soil above, adjacent to, and below the sewers. Results showed no significant amounts of contaminiation.



Fernald Environmental Management Project began operating its South Plume Interim Treatment System on March, 31, 1994. This system, using ion-exchange technology to treat ground water, will reduce uranium discharges from Fernald to the Great Miami River.

Nevada Test Site's Community Advisory Board for Nevada Test Site Programs held three preliminary meetings between March and May 1994 to consider organizational issues. The Community Advisory Board has received its charter and will hold meetings publicly on the first Wednesday of every month.

Rocky Flats Plant began construction of a 25,000-square-foot Centralized Waste Facility that will store containers of hazardous and low-level radioactive waste awaiting shipment to offsite licensed disposal facilities.

Albuquerque Operations Office prepared a plan to use the resources of the nine mixed waste sites it oversees to create real treatment capacity for the waste that minimizes time and cost. The plan defines an activity for each selected treatment option, assigns a site as project manager for that activity, defines responsibilities, and establishes a short-term schedule for initial activities.

Tulane and Xavier Universities were awarded a $23 million 2-year cooperative agreement to prepare an evaluation of risks to the public health and safety posed by conditions at weapons complex facilities that are addressed by compliance agreement requirements or Environmental Management use in preparing a report to Congress. As part of this effort, university representatives are planning to visit Oak Ridge, Rocky Flats, Hanford, Idaho, Fernald, Mound, and Savannah River this summer.

New Sampling Method Will Protect Savannah River Site Workers

The Westinghouse Savannah River Company's Environmental Restoration department and the Savannah River Site are using an innovative environmental sampling system to collect soil samples from the site's contaminated seepage basins. This remote sampling device is designed to reduce the potential exposure risk to workers who collect these samples for analysis to identify contaminants and determine the appropriate cleanup action for the site.

Prior to the development of the remote sampling technology, engineers used a barge equipped with a drill rig to float on the basin and extract samples. The old method was effective but required engineers to perform operations from within the basin where they were exposed to the hazardous and radioactive contaminants. Also, the barge, which came in contact with basin water, could only be used once before it was disposed of as contaminated waste.

The remote sampler eliminates the need for a barge because it allows operators to conduct sampling operations from the bank of the seepage basin. In the new method, a remote sampler is attached to the arm of a telescoping crane, maneuvered above the basin water, and inserted into the basin's soil to collect the sample.

The benefits of using remote equipment are significant. Engineers can distance themselves from contamination and greatly reduce the risk of exposure. Generation of waste is reduced because remote sampling eliminates the need to use and contaminate the barge and drill rig, thereby reducing or eliminating costs associated with disposing of and replacing the equipment. Remote sampling also enhances worker safety and saves tax dollars. According to Brian Hennessey, an environmental scientist at Savannah River, "the demonstration is part of an aggressive effort by Savannah River to reduce the risks and costs associated with the site's environmental restoration mission. The bottom line is a process that is safer and faster and more cost-efficient than earlier methods of characterizing our seepage basins." For more information, contact Karen Adams at (803) 725-4648.

The Savannah River Site's remote environmental sampling system that conducts operations from the banks of the seepage basin, greatly reducing the risk of worker exposure to contamination.

Innovative Scoping Process at Savannah River Site

In a continuing effort to listen and meaningfully respond to stakeholders' concerns, the Savannah River Operations Office in South Carolina recently addressed public criticism that too many formal meetings, contributing to costs, were being proposed. In response to the criticism, Savannah River combined the separate informational workshops and scoping meetings originally planned on three different site-related Environmental Impact Statements — the Waste Management, Interim Management of Nuclear Materials, and Defense Waste Processing Facility Supplement Environmental Impact Statements.

Held in April 1994, the informational workshops opened with a general overview and offered a videotape presentation that explained all three Environmental Impact Statements. Afterward, citizens were able to view displays, read information, discuss concerns, and ask questions of technical experts in break-out rooms available for each Environmental Impact Statement.

Response and comments on the less formal and more interactive workshops were so positive that Savannah River applied the new approach to scoping hearings held in May 1994. Small tables, seating six to eight people, were set up around the hearing room, allowing stakeholders to make statements from their seats or from a small side table outfitted with a microphone. This provided an atmosphere that made participating stakeholders feel more involved in the process and eager to take part in the proceedings. Those individuals desiring more information were provided with break-out rooms where Savannah River Site representatives provided answers to specific questions. The majority of participants complimented the new format and felt the effort was a step in the right direction.

For more information on the planning and execution of these joint meetings or specifics of the Waste Management, Interim Management of Nuclear Materials, or Defense Waste Processing Facility Supplemental Environmental Impact Statements at the Savannah River Site, contact Julie Peterson at (803) 725-1288.

Department Receives Mixed Reviews at Hanford Summit II

On June 16, 1994, Energy Secretary Hazel O'Leary kicked off Hanford Summit II, the second meeting held to address balanced long-term environmental and economic sustainability in the Hanford region in Washington. The Secretary stressed President Clinton's commitment to cleaning up the Hanford Site and cited as evidence the increasing level of funding dedicated to the effort, which has grown from $238 million in fiscal year 1989 to an estimated $1.7 billion in fiscal year 1995.

In her opening remarks, the Secretary asked Summit participants to provide constructive criticism and grade the Department on its efforts to meet commitments she made at the first Hanford Summit. Participants included representatives from labor, Indian Tribes, public interest groups, local government, the Hanford Advisory Board, and the State of Oregon.

Stakeholders at the Summit gave the Department both praise and criticism for its performance in cleaning up the Hanford Site and dealing with public concerns. Although the Secretary's new initiatives at openness won high marks, stakeholders gave Hanford officials an unfavorable review for what they see as a lack of field office support for the Secretary's initiatives.

O'Leary endorsed the conference initiatives that were proposed by working groups set up before the Summit began. These initiatives are awaiting further review by Tribal leaders, who have 45 days to pen the endorsement.

As the Summit closed, late afternoon Thursday, the majority of participants were pleased with the outcome and hoped that the Summit would serve as the next building block toward cleaning up the Hanford Site. For more information on Hanford Summit II, contact Dave Dillman at (509) 372-1082.

Stakeholders and Regulators Participate in the Hanford Site's FY 1996 Activity Data Sheet (ADS) Development Process

During the past few months, Hanford's regulators and stakeholders have taken an active part in developing the Richland Operations Office Fiscal Year 1996 planning year budget. This participation includes involvement in the process to develop Hanford's Activity Data Sheets, the basic planning and budget tool that describes the activities included in the Environmental Management program.

Hanford officials met with regulators and stakeholders in two parallel series of activities, received their comments on the budget, and incorporated their input. The officials then convened a Senior Management Team that refined the Hanford budget proposal according to stakeholders' views and comments. Using the requirements in the new Hanford Federal Facility Agreement and Consent Order (or Tri-Party Agreement) and the recommendations of the Keystone dialogue as guidelines, Hanford's initiative to involve stakeholder and regulator involvement has strengthened its budget proposal and improved understanding and teamwork among the parties.

To start the process of involving its regulators, the Richland Operations Office held training sessions, briefings, and working meetings with representatives of the Washington State Department of Ecology and Environmental Protection Agency Region 10. Through these activities, regulators were able to review and help revise the proposed priority list. The regulators' participation in the development of the Hanford budget proposal served to strengthen that proposal and to improve understanding and teamwork. Plans are being formulated for ways to improve the quality and efficiency of this process for the next cycle.

Stakeholders were also given an opportunity to have their views considered in the Activity Data Sheet development process. To facilitiate this participation, the Richland staff first considered the recommendations of the Hanford Future Site Uses Working Group and the Hanford Tank Waste Task Force while developing its original draft budget. Next, during March 1994, the operations office held public meetings in Oregon and Washington to provide stakeholders and the public with information on the President's Fiscal Year 1995 budget proposal and to solicit their views concerning the priorities for the Fiscal Year 1996 budget. These meetings were held early in the budget process to ensure the time to incorporate stakeholders' input into the Activity Data Sheets before submitting them to Headquarters.

During the public meetings, Richland representatives committed to provide the public with updates on the President's FY 1995 budget as revisions occur, to hold a series of meetings during November and December 1994 to report on actual performance during the completed 1994 fiscal year, and to arrange another series of these meetings during spring 1995 to discuss the President's FY 1996 budget proposal and the priorities for the FY 1997 proposal.

Currently, Hanford officials are planning ways to improve the quality of stakeholder involvement for the next budget cycle. By identifying potential improvements and revising the process of budget review, Hanford can provide its stakeholders with the opportunity for a more meaningful role in budget development, and Hanford can develop a more solid budget. For more information, contact Jim Peterson at (509) 376-6731.

Streamlined Characterization Begun at Palos Forest Preserve

Bechtel National, Inc., performing work for the Department's Chicago Operations Office, has initiated site characterization activities at the Palos Forest Preserve site, located approximately 20 miles from downtown Chicago.

Site characterization began in May 1994, using an expedited site characterization approach designed to obtain analytical data faster and more efficiently, with less intrusive work and at lower costs than traditional characterization (refer to the "Streamlining Characterization" article on page 7 of *EM Progress*, Volume 3, Number 2, Summer 1993).

The expedited or observational approach being used relies on rapid turnaround of sample analyses from a close support laboratory and integration of the results with previously collected data to direct further sampling efforts. Biased samples from the areas of suspected contamination are analyzed using the local support lab, which can provide results to onsite technical staff in 1, 3, 7 or 14 days. This rapid turnaround of data facilitates determination of the nature and extent of contamination by allowing multiple sampling rounds to be performed in a local area in one field season.

In support of the expedited site characterization approach, non-intrusive investigations were performed to help define surface and shallow subsurface features. These investigations included a civil survey, historic photography analysis, detail surface features mapping, radiological walkover, and geophysical surveys.

Intrusive work began in June 1994 when drilling and geoprobe operations moved onto the site. Monitoring wells will be installed at selected locations onsite that will compliment the monitoring network installed by Argonne National Laboratory immediately surrounding the site. Geoprobe sampling equipment will be used to install temporary well points that will be used to determine groundwater flow directions and gradients. The hydraulic push geoprobe equipment will also be used in suspected contaminated areas to obtain samples while generating little to no investigation-derived waste.

The site investigation is expected to be completed by October 1994, and the Site Characterization Report will be submitted in early 1995. The Palos Forest Preserve site will then be in a maintenance mode with interim actions scheduled to start in the spring of 1995.

For more information regarding these activities, contact Jay Hunze at (708) 252-2428.

Development of FFCA Mixed Waste Treatment Plans Continues

In compliance with the Federal Facility Compliance Act, the Department is developing Site Treatment Plans for each of the 48 sites in 22 States that are currently generating or storing mixed waste, or are expected to do so in the near future. The Act directs the Department to prepare a Site Treatment Plan for each site specifying a strategy for developing mixed waste treatment capacities and technologies. The Plans must be submitted to the State or the U.S. Environmental Protection Agency for approval.

The Department is following a three-step process that includes the issuance of Conceptual, Draft, and Final Proposed Site Treatment Plans. This will be followed by the issuance of compliance orders by October 1995 to implement the approved Plan. The Conceptual Plans, released in October 1993, outlined a range of possible options for mixed waste treatment. The 48 sites are now in the final stages of preparing Draft Site Treatment Plans that will be released in August 1994.

The Department has worked closely with the State and Environmental Protection Agency regulators through the National Governors' Association to define the process for developing these Plans. The Draft Plans will identify, to the extent possible, the preferred option for the treatment of each waste. The Draft Plans were prepared using the "bottoms-up" approach and have not been completely evaluated for potential impacts to other Department sites and the overall Department program. These preferred options may change as evaluation of complex-wide impacts and State-to-State discussions progress.

Although not required by the Federal Facility Compliance Act, the Department has agreed to address disposal issues in this process. The Department and the States have formed a working group to address disposal, developing a process to evaluate the sites that generate or store mixed waste (or will do so within the next five years) to determine their suitability for waste disposal. Additionally, the Department and the States are working together to determine a small group of sites that will undergo detailed performance evaluations. A description of this process will be incorporated into the Draft Plans.

As the Site Treatment Plans are developed, public involvement in the process will increase. The primary public involvement opportunities will be focused at the Department site level. However, these efforts will be supplemented at the national level with mailed information, an informal Federal Facility Compliance Act open house in Washington, D.C., during August 1994, and possibly other activities. In addition, a *Federal Register* notice will announce the availability of the Draft Plans at Department of Energy Reading Rooms for public review and comment.

For more information on any of these activities, please contact the Center for Environmental Management Information Center at 1-800-736-3282.

DOE Benchmarking Initiative Wins Award

The American Productivity and Quality Center recently awarded the Department of Energy's Office of Environmental Management a bronze distinguished achievement award for its Benchmarking for Cost Improvement Initiative. Fourteen individual benchmarking studies were submitted to the Center for consideration in this year's awards, and the Department's entry was one of five winning studies announced. Award recipients presented their study at the June annual American Productivity and Quality Center Benchmarking Conference in Chicago, Illinois.

The Center's benchmarking study award promotes, encourages, and recognizes excellence in the execution of a benchmarking study. Applications were evaluated by an independent panel of recognized experts and leading practitioners of benchmarking. The award process included an evaluation of planning, information collection, data analysis and results, and improvements.

For more information on the Department's Benchmarking for Cost Improvement Initiative, contact Stephen Meador at (301) 903-7422.

Comments

We are interested in receiving your comments—what you like and what you don't like—about *EM Progress*. Your views, comments, and suggestions are appreciated.

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

VOLUME 4 NUMBER 1 SPRING 1994

FINAL SOLAR POND SLUDGE REMOVAL BEGINS AT ROCKY FLATS

As a first step toward the remediation and final closure of two solar evaporation ponds at the Rocky Flats Field Office in Colorado, the Department of Energy is currently extracting some 700,000 gallons of sludge contaminated with radioactive and hazardous materials from the ponds. The result of decades of nuclear weapons parts production, the contaminated sludge will eventually fill up approximately 70 double-walled storage tanks made of high-density polyethylene. These 10,000-gallon tanks will temporarily store the sludge at Rocky Flats until a cost-effective treatment is chosen.

Cleanup at the Rocky Flats site is guided by the 1991 Interagency Agreement, a document signed by the Department of Energy, the Colorado Department of Health, and the U.S. Environmental Protection Agency. The joint agreement calls for the waste ponds to be empty by January 20, 1995, and project managers expect to beat that milestone by several months.

Energy Secretary Hazel O'Leary visits the solar evaporation ponds at the Rocky Flats Site near Denver, Colorado.

To extract the contaminated sludge from the two ponds, workers are using a 2,000-gallon tanker truck outfitted with a vacuum hose. This equipment literally "sucks" the sludge out of the pond and into the tanker truck during a process that takes about 30 minutes. The sludge is then driven to the storage site and pumped into tanks.

Currently non-operational, the five solar evaporation ponds were used beginning in 1953. They stored and evaporated production-related process water that contained nitrates, treated acidic waste, and low levels of radioactivity. Production use of the ponds was stopped in 1985. Three of the five ponds were emptied previously by consolidating the sludge.

For more information regarding the sludge removal process, contact Beth Brainard-Jordan at (303) 968-5993. ★

HANFORD SUMMIT II RESCHEDULED

The Hanford Summit II, slated for April 27, 1994, was canceled in observance of former President Richard M. Nixon's funeral. The Summit has been rescheduled for Thursday, June 16, 1994. Secretary of Energy Hazel O'Leary, Assistant Secretary Tom Grumbly, and Washington State Governor Mike Lowry are planning to attend.

The importance of the Hanford Summit resides in the fact that Hanford has been designated as the "flagship" for Department of Energy waste remediation endeavors. Hanford Site also has taken the lead in open, public disclosure about its past. Secretary O'Leary's participation at the first Summit in September 1993 produced many promises, and Summit II will feature her report on the status of those promises. The Secretary will also be presented with a list of stakeholder initiatives developed over the last six months for her response.

Leaders from the Yakama, Umatilla, and Nez Perce Indian Tribes will hold special council with Secretary O'Leary to discuss the projected 30-year effort to clean up Hanford.

For more information on the Hanford Summit II, contact Dave Dillman (509) 372-1082. ★

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PERSPECTIVES... A continuing series of guest editorials

TRANSITION, DEACTIVATION, AND DECOMMISSIONING OF DOE FACILITIES: LEVERAGING THE U.S. EXPERIENCE

GUEST EDITORIAL BY WILLIAM A. WALLACE, VICE PRESIDENT, CH2M HILL

The Department of Energy is about to embark on a major effort to transition, deactivate, and decommission hundreds of facilities with nuclear and mixed waste contamination throughout the United States. Naturally, one of the prerequisites for such an undertaking is to have a set of standards that are achievable and cost-effective, as well as acceptable to the stakeholders. To date, no such standards exist within the Department of Energy complex. However, the Nuclear Regulatory Commission has now begun the task of standards development.

While this standards-setting task may not sound formidable, those of us involved in environmental restoration of nonnuclear chemical contamination have been challenged with the question of "how clean is clean" for over a decade. As yet, there seems to be no solution in sight. From this experience, we sense that the Nuclear Regulatory Commission may find itself in a similar predicament, trying to create standards acceptable to a broad set of stakeholders in a technical environment full of unknowns and uncertainties. Nevertheless, getting the Nuclear Regulatory Commission involved in regulations governing the Department's facilities is a positive step, since the U.S. engineering and construction companies and the reactor plant experts have decades of successful experience in developing and applying Nuclear Regulatory Commission regulations intended to protect the health and safety of the public. As a matter of fact, this legacy of applying these regulations was a technology introduced to the world by the United States in the 1970's.

In an environment of developing standards, there may be a temptation to try for a quick fix, i.e., adopt deactivation and decommissioning methods used in other parts of the world. While the experience of others is clearly useful, it would be imprudent to simply assume that what has been tried elsewhere will be acceptable in the United States. When it comes to standards for public health and the environment, we in the United States have grown to expect a high degree of standard-setting stringency, process openness, and public acceptability. It has become part of our culture. Furthermore, there is already an existing technical infrastructure from which to draw for technology and standards experience. The U.S. civilian and Navy nuclear programs have developed and implemented perhaps the most disciplined, structured, and regulated programs in the world. This is a major asset and should be maximally used when critical national security and public safety questions need to be addressed within the United States in transition planning and deactivation of Department of Energy production facilities.

There is an old saying that problems are really opportunities in disguise, and in this venture, we believe that opportunities abound. The United States has emerged as the world leader in environmental quality and technology. Its standards and programs are seen as the benchmark for successful environmental management throughout the world. A well-developed set of U.S. facilities deactivation standards would, in all likelihood, become a new benchmark. Furthermore, a U.S. deactivation and decommissioning industry, incubated in this environment, would have a unique advantage in the global market for exporting its technology and expertise. Therefore, this concept helps the Administration's strategic initiative for promoting the export of U.S.-based environmental technology.

Finally, we envision a new and important role for the National Laboratories. Standards development in these new areas requires research and testing to ensure that standards developed are technically practical and supportable. The National Laboratories have had to solve a myriad of defense production, national security, and environmental problems for over 50 years. Their facilities and expertise can and should be put to practical use quickly for both domestic and global issues of this nature in strategic alliances with the U.S. private sector.

Done correctly, we can leverage our unique technology and benchmark status to help solve a world-wide problem, while contributing to our own economy. ★

Bill Wallace is currently CH2M HILL's Director of Strategic Planning. Formerly, he managed the firm's hazardous waste engineering activities.

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Beverley Heffernan, Office of Environmental Management, EM-5, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-3919.

HEADQUARTERS NOTES

ENVIRONMENTAL MANAGEMENT PROGRAM REORGANIZATION SIGNED

The proposed Office of Environmental Restoration and Waste Management reorganization was signed on April 13, 1994. Officially, the program is now the Office of Environmental Management. The new organization will eliminate duplicative and overlapping functions between line and staff offices; consolidate administrative support, information management, and financial management functions; provide independent focal points for technical and regulatory compliance monitoring and site integration; and develop a structure to help the program better serve its customers.

DOIT ANNOUNCES 14 TECHNOLOGY PROJECTS

On January 31, 1994, the Federal Advisory Committee to Develop On-Site Innovative Technologies (DOIT) announced its selection of 14 innovative Federal technology projects at 9 demonstration sites. During the next year, these projects will be used to test and evaluate new approaches to streamlining regulatory review, improving commercialization of technologies, and involving local citizens. The results of testing the new approaches at the demonstration sites will be used to guide changes to State and Federal policy on the use of innovative environmental technologies.

The 14 technology demonstrations endorsed by the Committee were chosen from a set of candidate projects identified by 4 fact-finding working groups. For more information, contact Texas Chee at (301) 903-7926.

GRUMBLY ADDRESSES CBO REPORT

In an April 5, 1994, letter to Congressional Budget Office Director Robert Reischauer, Assistant Secretary Grumbly disputed conclusions of the Congressional Budget Office's report, "Reducing the Deficit: Spending and Revenue Options." The report, which was issued in March 1994, states that the Department of Energy can reduce the Environmental Management budget by 10 percent each year between Fiscal Years 1995 and 1999 by cutting administrative and support functions and delaying some projects. The report examined the Environmental Management program as part of a broader study of options to reduce the Federal budget deficit.

In his letter, Mr. Grumbly said that the report ignored savings the Department anticipates through contract reform, new technology, adding Federal positions for high-caliber employees, and other advances. The report also included steps that Mr. Grumbly feels would undermine the Department's ability to perform cleanup work. For more information, please contact Jim Werner at (202) 586-9280.

ENVIRONMENTAL MANAGEMENT 1994 NOW AVAILABLE ON AUDIOTAPE

Environmental Management 1994 is an annual report that describes in detail the Department's national Environmental Management program. Released in March 1994, *Environmental Management 1994* has been distributed to more than 14,000 members of the public, stakeholder groups, State and local government representatives, and Members of Congress. In response to a telephone request from a citizen to the Center for Environmental Management Information, the report is now available on audio cassette. The audio version of the report may be obtained by calling 1-800-736-3282.

If you have already read *Environmental Management 1994* and have suggestions or comments on its structure or content, please call Beverley Heffernan at (202) 586-3919. ★

SUPERFUND REAUTHORIZATION UPDATE

After weeks of negotiations, the Administration's overhauled Superfund program has cleared a crucial hurdle in Congress. A House subcommittee approved the reauthorization package for the Superfund legislation set to expire on September 30, 1994.

Assistant Secretary Grumbly has stated that Superfund, enacted in 1980, had been ineffective because "few people anticipated the complexities of the site cleanups, the need for national standards, the very large number of sites that would be included within the Superfund umbrella, or how to balance the cost of cleanup against the development of chronic health and environmental threats."

Recognizing the program's deficiencies, much work has been done to improve Superfund's methodology. The key provisions of the reform affecting the Department are community involvement, State role at Federal facilities, economic redevelopment and, of particular significance, remedy selection. Remedy selection allows for varying methods of cleanup depending on future land use expectations and could result in significant savings in Environmental Restoration costs.

Grumbly is confident that the approval of the Administration's Superfund reauthorization proposal, expected within the year, "will have a positive effect upon the cost, efficiency, and effectiveness of the Environmental Management Program."

Baseline Report Kickoff Meeting Held

On April 18, 1994, a one-day workshop was held at the Sheraton City Center in Washington, D.C., to help define the scope and format of the Environmental Management program's Baseline Environmental Management Report. The development of this baseline report plays an integral part in meeting the program's goal to reduce costs, improve productivity, and demonstrate tangible results. Both program and operations office representatives participated in the workshop and heard from panelists from Congress and other Federal agencies.

In his keynote address, Assistant Secretary for Environmental Management Tom Grumbly told the audience that the Baseline Environmental Management Report will help build trust and credibility in both the Department of Energy and the Environmental Management program. Mr. Grumbly encouraged the participants to listen to advice from people within and outside of the Department, and work across programmatic and ideological boundaries. Active involvement of stakeholders in all stages of report development will ensure that the baseline report accurately estimates the total cost of the Environmental Management program within a given set of scenarios.

Guest speakers from the Environmental Protection Agency's Office of Federal Facility Enforcement and Office of Solid Waste and Emergency Response, the Department of Defense's Office of Environmental Security, and the House Armed Service Committee staff participated in a panel discussion to provide workshop participants with guidelines and suggestions for developing the baseline report. Melinda Kassen, a staff member of the House Armed Services Committee, indicated that the reporting requirement was drafted in response to suggestions in the Keystone Report to enhance cost and progress tracking.

In an afternoon breakout session, operations office representatives discussed the scenarios and assumptions to be used in developing the baseline report. Each scenario will incorporate a unique combination of site-specific parameters, including cost, possible land use, and schedule. These scenarios will represent the range of possible environmental management strategies at each site.

Over the next few months, participants in the workshop will develop a guidance for producing the Baseline Environmental Management Report. After the House Armed Services Committee reviews this guidance, it will be sent out to the sites. For more information regarding the workshop or the baseline report, contact Jim Werner at (202) 586-9280. ★

The Baseline Environmental Management Report will expand on general information regarding total program cost that the Environmental Management program must provide to the Office of Management and Budget on June 15, 1994. Mandated by the National Defense Authorization Act for FY 1994, the baseline report will contain all costs, both direct and indirect, for the program and will include estimates of future responsibilities for projects which are currently underway. The level of detail of information reported has not yet been determined.

The Baseline Environmental Management Report, which is due to Congress on April 15, 1995, will consist of two parts — environmental restoration and waste management. **The baseline report will be the Environmental Management program's key planning document, incorporating the information previously generated for Five-Year Plans, Roadmaps, Site Specific Plans, and Installation Summaries. It will draw upon other planning initiatives such as the Programmatic Environmental Impact Statement, the Federal Facility Compliance Act Mixed Waste Treatment Plans, Technology Development Plans, and Activity Data Sheets.** ★

DOE Holds Open House and Tours at Slick Rock, Colorado

The Department of Energy and the State of Colorado Department of Health held an open house and public tours of the Uranium Mill Tailings Remedial Action Project's Slick Rock site on Friday, April 22, 1994. The event drew over 30 interested members from the small community, and several newspapers covered the event. The turnout was very encouraging according to Cindy Foster from the Uranium Mill Tailings Remedial Action Project Office.

The open house was suggested by Department of Energy Site Manager Russel Edge as a good way to create public involvement and awareness. "We know there has been a lot of interest and a lot of questions regarding the project." To meet this obligation, Edge requested that project personnel answer questions and comments posed during and after the event.

The Uranium Mill Tailings Remedial Action Project is assigned the task of remediating over 24 abandoned sites previously dedicated to the construction of nuclear weapons. MK-Ferguson, the prime remedial action contractor, plans to move onto the Slick Rock site by the fall of 1994, with construction activities getting underway in the spring of 1995.

For more information on the Uranium Mill Tailings Remedial Action Project or remedial activities at the Slick Rock site, please contact Cindy Foster at (505) 880-2517. ★

CONSTRUCTION BEGINS FOR HANFORD FACILITY

On April 15, 1994, officials of the Department of Energy, the Environmental Protection Agency, and the Washington State Department of Ecology and various integrated management team company representatives helped kick off a groundbreaking event for the start of construction of the Waste Receiving and Processing Facility Module 1. Hanford's first major solid waste processing facility will enable workers to safely analyze and repackage waste containers left over from Hanford's defense production activities years ago, and to prepare the contents for permanent disposal.

The Waste Receiving and Processing Facility Module 1 will handle a variety of waste materials currently in retrievable storage trenches near the center of the Hanford Site. These include barrels and boxes contaminated with radioactive as well as chemical substances. Also included is solid waste containing transuranic elements — uranium, plutonium, and americum — elements that take thousands of years to decay.

Site preparation for the facility began in February 1994, and operation is expected to begin in March 1997, satisfying a Tri-Party Agreement milestone for the long-term cleanup of the Hanford Site. About 80 to 100 workers will be employed during construction, and a similar number will be employed during plant operations.

Recognizing that the entire Hanford cleanup is for the benefit of future generations, facility officials invited student representatives from several local high school environmental studies programs to participate in the groundbreaking ceremony. Students and their instructors were guests at the ceremony, and the students performed the actual "dirt turning" that officially started project construction.

Local environmental studies students turn the first shovels of dirt at groundbreaking ceremonies for Hanford's Waste Receiving and Processing Facility Module 1.

For more information about Waste Receiving and Processing Facility Module 1, contact Judith Graybeal at (509) 376-2472. ★

TECHNOLOGY BRIEFS

PRECIOUS METALS RECOVERY FROM NUCLEAR WEAPONS

Sandia National Laboratory is evaluating safe and environmentally sound methods of extracting gold, silver, palladium, and other valuable metals from nonnuclear weapon components through the Waste Component, Recycle, Treatment, and Disposal Integrated Demonstration project. The laboratory is combining new high-tech advances with old low-tech machinery to recover these metals from decommissioned nuclear weapons.

One of the new technologies being tested is a water-jet cutting technique. It is being utilized to slice through weapons components that are embedded in foam or an epoxy material. During the process, an X-ray system is used to determine the location of the embedded component. This cutting technique is considered safer than conventional sawing methods that produce heat and cause the release of carcinogenic materials from the weapon. This release could pose a health threat to personnel. The new technique is also considered more efficient because the water-jet remains cool, allowing the water to be recycled for the next component.

Another method being utilized by Sandia to recover precious metals involves the employment of a vintage 1920 blacksmithing tool, the forge hammer. The weapons component is pounded repeatedly by the hammer to crush the nonnuclear parts into small particulates that can be easily separated and recycled. Prior to being "hammered," the components are frozen in liquid nitrogen to make them brittle and shatter upon impact. This reduction process enables the mixture of particles to be more easily handled and segregated using mining technologies, and declassifies the component by making it inoperable.

WASTE ACID DETOXIFICATION AND RECLAMATION

Pacific Northwest Laboratory has developed a spent acid recycling system that significantly reduces industrial waste disposal costs. The laboratory's research has shown that more than 90 percent of spent acid can be purified and reused, minimizing or even eliminating the volume of waste requiring disposal.

The technology, which is available to private industry, has been recently licensed to Viatec Recovery Systems, Inc. Viatec, headquartered in Hastings, Michigan, has opened an office in Richland, Washington, to design and manufacture these acid

(Continued on page 6)

ENVIRONMENTAL MANAGEMENT SNAPSHOTS

IN THE FIELD...

Hanford Site, Richland, Washington: Transition of Environmental Restoration program activities to Bechtel Hanford, Inc., from Westinghouse Hanford Company is continuing. The first contract modification was completed in April, and progress is being made to meet the July 1, 1994, deadline.

Rocky Flats Field Office, Golden, Colorado: The Rocky Flats Plant has been officially renamed the Rocky Flats Field Office.

West Valley Demonstration Project, West Valley, New York: West Valley Nuclear Services Co., Inc., operations achieved 1,000,000 personal man hours without a lost time accident (September 11, 1993, through March 11, 1994). This significant accomplishment was made possible through continued management support of Occupational Safety Programs at the project.

National Priority List additions are expected to be made by EPA for the **Pantex Plant in Amarillo, Texas; the Laboratory for Energy-Related Health Research site in Davis, California; and Paducah Gaseous Diffusion Plant in Paducah, Kentucky.** The final listing package is awaiting approval by EPA before going to the Office of Management and Budget.

Department of Energy Headquarters, Washington, D.C.: The Environmental Management Progress Tracking System (PTS) will be accessible to the public beginning in June 1994. For information, contact Arnold Gritzke at (202) 586-3957.

(Technology Briefs, continued from page 5)

recycling systems for industrial and goverment operations. The recycling systems use a combination of advanced materials, distillation, and precipitation to isolate and extract heavy metals and clean the acid.

MOLTEN METAL RECYCLING TECHNOLOGY

A "closed loop" recycling system that utilizes molten metal to break down useless waste such as sludge and electronic parts and capture marketable products is being developed by Molten Metal Technology, Inc. Hydrogen gas and steel are examples of such useful products that can be extracted and sold.

This recycling system depends upon a reactor tank that holds a mixture of molten metal, usually iron, and catalytic chemicals at a temperature of 3,000 degrees Fahrenheit. When waste is added to the molten metal bath inside the tank, its chemical bonds are severed between constituent elements due to the extreme heat and the catalysts. Sludge has been reduced to hydrogen gas, ceramic materials, and metals. These metals can be further separated and reused within the recycling system.

Further information regarding these new technologies may be obtained by contacting Miles Dionisio at (301) 903-7639. ★

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ECOSYSTEM MANAGEMENT WORKING GROUP ESTABLISHED

On April 12, 1994, representatives from several Headquarters program offices and operations offices met in Washington, D.C., to establish a working group to define an "ecosystem management" approach for the Department. This approach is centered around the concept of ecosystem management as defined by the White House's Environmental Policy Office.

Led by the Office of Field Management, the working group's goal is to define the process that would allow participants to develop a shared vision of the desired condition of Environmental Management sites and their host regions. This vision would be consistent with the goal of maintaining the natural sustainability and biological diversity of the sites while supporting future mission needs, sustainable economic development, and host communities. This process would meld Environmental Management program efforts in economic development, future use planning, and public participation with the efforts of

- the Office of Environmental, Safety and Health in defining and limiting damages to natural resources and
- the Office of Energy Research in managing National Environmental Parks.

The management aspects of these efforts would be implemented in the Site Development Plans being prepared by the Office of Field Management. The working group submitted a conceptual approach to the Secretary's office on April 18, 1994, and a detailed proposal is due in July.

As an outgrowth of its environmental management and research initiatives under this mandate and its ongoing site planning efforts, the Department of Energy has achieved modest success in initiating some fundamental elements of ecosystem management throughout the complex. In 1993, Secretary O'Leary committed to a renewed emphasis to the pursuit of total environmental quality management by stating the Department's mission to be one of "providing the scientific foundation, technology, policy and institutional leadership necessary to achieve...improved environmental quality."

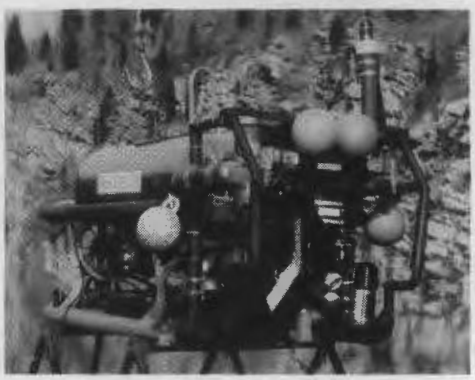
For more information about the ecosystem management working group, contact Jeff Crater at (202) 586-7709. ★

KERR HOLLOW QUARRY CLEANUP COMPLETED

The Department of Energy has completed cleanup actions at Kerr Hollow Quarry, a former waste treatment site near the Y-12 Plant at the Oak Ridge Reservation in Tennessee. The remediation activities, which were required by the Resource Conservation and Recovery Act (RCRA), took three years to complete and resulted in the removal of more than 19,000 items from the 55-foot-deep quarry. This cleanup is the first in the Department's history to be accomplished entirely by remote control.

From 1951 to 1988, the quarry received water-reactive and shock-sensitive materials from the Y-12 Plant and Oak Ridge National Laboratory. Upon their arrival, waste containers were rolled onto the quarry's edge where they were punctured. This procedure allowed water to enter the containers and react with the waste, thereby rendering it nonhazardous. However, subsequent cleanup operations discovered that many containers remained intact on the quarry floor.

Due to the unique nature of the cleanup work, special equipment was used to ensure the safety of the workers. This equipment included a remotely operated vehicle, a shredder modified for underwater use, and grappling hooks. The project staff used the the remotely operated vehicle to locate submerged waste containers and conduct the cleanup from a safe distance away. Operators maneuvered the grappling hooks over the waste containers and then deposited the containers into the underwater shredder. Once shredded, materials were monitored for radiation and placed into concrete vaults for storage.



This remotely operated vehicle allowed workers at Kerr Hollow Quarry to conduct cleanup activities from a safe distance.

Special adjustments, such as placing a cover on the shredder, were made to protect workers from volatile chemicals. A primary goal was to prevent any reactions from taking place on the water's surface and allowing gas to escape into the air. As a further precaution, toxic gas monitors were installed and connected to an alarm system. Additional safety training for site workers was held, and emergency preparedness briefings were offered for employees of several nearby businesses.

The 5,000 cubic feet of debris resulting from the cleanup was disposed in an area of Y-12's western Bear Creek Valley known as the Walk-In Pits, a site also undergoing a RCRA cleanup. According to Sherry Lankford, manager of Y-12 Environmental Restoration, placing the debris in the Pits rather than building a new treatment facility created substantial cost savings for the Department. With this disposal method, Lankford said, "we were able to save about $16 million."

For more information regarding the Kerr Hollow Quarry cleanup, contact Gail E. Rymer at (603) 574-8093. ★

EM Progress Responds to Reader Comments

Since Spring 1992, we have received close to 200 reader comments and suggestions regarding *EM Progress*. Most of the comments have been very positive, expressing overall enthusiasm and interest in our articles. While these compliments are always appreciated, we equally appreciate your helpful suggestions and critiques that have enabled us to improve the quality of our articles and, hopefully, their usefulness to you, the reader.

For example, reader interest in more information about new technologies resulted in subsequent articles that included stories about new tank waste retrieval technologies at Hanford and dustless decontamination cleanup technology at Rocky Flats. Also, comments from our readers encouraged us to provide contact persons and phone numbers whenever possible in our articles.

A frequent comment we received early on involved the idea of printing *EM Progress* on recycled paper. In response, the Spring 1993 edition was printed with soy ink on recycled paper and ensuing issues have followed suit. The Department's policy is to use recycled paper for all of its publications.

We continue to be responsive to your comments and suggestions, and encourage you to let us know what you think. ★

Comments

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

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EM PROGRESS

FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

VOLUME 3 NUMBER 4 WINTER 1994

GRUMBLY ON ENVIRONMENTAL JUSTICE

In a 1992 report, "Environmental Equity - Reducing Risk for All Communities," the Environmental Protection Agency found that racial minorities and low-income communities experience higher exposure to toxic pollutants than the general population. In response to this report and similar findings in other studies, the concept of environmental justice has emerged as the provision of fair treatment of people of all races, cultures, and income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

In his remarks before the National Institute of Environmental Health and Safety Symposium on Health Research and Needs to Ensure Environmental Justice on February 12, 1994, Assistant Secretary Thomas Grumbly announced the Department's vision for transforming the way government relates to people and empowering decisionmaking at the local level within a framework of local needs. The Assistant Secretary stressed the need to implement a "justice-based" environmental policy that will solicit the active involvement of all affected parties in making decisions concerning budgets, programs, and priorities. He promised to work hard to set up effective mechanisms at both environmental sites and defense sites around the country.

Regarding specific obligations to the Indian Nations, Assistant Secretary Grumbly pledged to broaden and deepen financial commitments for grants to Indian communities near Department sites. The new grants will fund technical expertise that will allow Indian Nations to participate knowledgeably in Departmental regulatory processes. He also pledged to provide funding for similar technical assistance to the African American community near the Savannah River Site in South Carolina. Grumbly further pledged to raise the priority for environmental restoration at sites that impinge on or directly affect Tribal holy places, burial grounds, or other areas of special importance to Indian Nations.

On the subject of jobs, the Assistant Secretary made three specific commitments. First, he promised to change the character of the Department's workforce both at the technical and administrative level to reflect the ethnic makeup of local communities.

Second, recognizing that the Department is the Nation's largest contractor with an annual budget of $18 billion, Grumbly made a commitment to examine the Department's record in minority contracting in the environmental arena, pledging to increase minority contracting by 100 percent over the next two years.

Third, the Assistant Secretary promised to work more closely with the unions in making the health and safety of workers and Department sites his number one priority. In many cases, Department of Energy land used for nuclear weapons production and testing was formerly owned by Indian Nations. In considering the reuse or transfer of these lands no longer needed for the nuclear mission, Grumbly promised that Indian Nations will have a greater voice than just their numbers would indicate.

In closing, the Assistant Secretary expressed the desire to hear public demands and to try to put together an agenda for action. While there is much work to do, Grumbly says, we must "seize the chance we have to work together...so that our children will be proud of all of us." ★

As part of the planned reorganization announced on February 3, 1994, Assistant Secretary Grumbly unveiled the new program name—"Environmental Management"—replacing the former Environmental Restoration and Waste Management designation. The shorter name is reflective of a more streamlined program that is determined to get the job done as effectively and economically as possible.

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PERSPECTIVES... A continuing series of guest editorials

ZEN AND THE ART OF CLEANUP ACCOUNTABILITY

GUEST EDITORIAL BY TODD MARTIN (HANFORD EDUCATION ACTION LEAGUE)

Too much money is being spent on too little cleanup. A culture change at the Department of Energy was supposed to bring us into a new era of openness and accountability for the cleanup mission. Instead, we have seen the "more bang for your buck" weaponeers at the Department change into "barely audible pop for your billions" environmental restorers. Much of the problem can be attributed to a lack of accountability.

Tom Grumbly should be credited for correctly identifying the problem. The two day stand down of the cleanup program sent a message: cost-effective cleanup is going to be a priority during his tenure. But identifying the problem is a far cry from solving it. From here on out, Grumbly must make aggressive changes in the way the Department of Energy does business. And that means improving accountability.

The Department's contracting system is often decried as one of the root causes of cleanup's shortcomings. And rightly so. Accountability mechanisms for dollars spent on cleanup activities either don't exist or don't work. Department of Energy auditing of contracts is years behind schedule—so much so that oftentimes the contractor itself does the audit and the Department signs off on it. We need someone other than the fox guarding the chickens.

Increasing the Department of Energy's scrutiny of contractors is not enough. The Department must focus more effort on what is oftentimes the most effective accountability mechanism—meaningful public participation. Information pertaining to cleanup activities and their costs (including contract audits) must be made understandable and publicly available in a timely fashion. The President of Westinghouse Hanford Company told the Hanford Education Action League that their cleanup expenditure information was a matter of "public record" over a year and a half ago. Since then, we have fought to obtain this "public record" information. We received it this month through an appeal of the Freedom of Information Act, which Westinghouse fought every step of the way.

Grumbly must ensure that such information is truly made a matter of public record. Secrecy and a lack of accountability have left us with an unparalleled environmental disaster. More of the same will only waste tax dollars and, by hindering cleanup, ensure the continuation of that legacy. ★

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Management program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Beverley Hefferman, Office of Environmental Management, EM-14, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-3919.

CENTER FOR ENVIRONMENTAL MANAGEMENT INFORMATION OPENS

In January 1994, the Department opened the new Center for Environmental Management Information. The opening of the center reflects the Office of Environmental Management's commitment to increase public involvement and establish a meaningful partnership with the public.

The goal of the center is to serve as a centralized location for obtaining current program-wide information. A toll-free number is accessible nationwide to ensure that stakeholder concerns are heard and addressed. The center will house a library containing both technical and nontechnical documents, visual aids, videotapes, and periodicals. It will also offer access to an online legal and news service. Environmental Management documents are available upon request. ★

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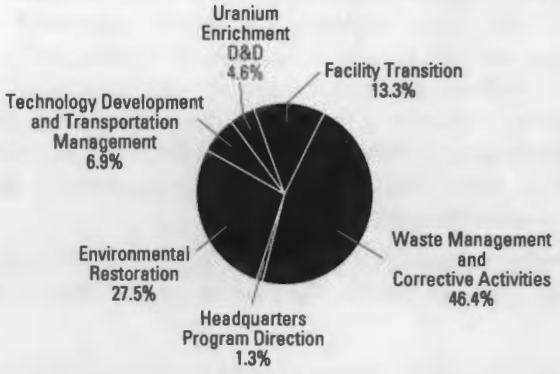
THE FY 1995 BUDGET—MEETING THE CHALLENGE

For fiscal year (FY) 1995, the Department of Energy is requesting $6.3 billion to meet the responsibility of cleaning up contaminated soil, ground water, and facilities at over 130 sites in 34 States and territories. The FY 1995 request is just a few million dollars more than was received for the current fiscal year and reflects the Department's effort to improve efficiency and lower costs. The pie chart shows what percentage of the budget request each program would receive.



In the spirit of "doing more for less," the Department is working hard to meet the six goals that Assistant Secretary Thomas Grumbly set for the Environmental Management program. These six goals include managing and eliminating urgent risks and threats in the program, providing a safe workplace, getting the system under control managerially and financially, becoming more outcome oriented, focusing technology development on major environmental issues, and developing strong partnerships between the Department and its stakeholders.

ENVIRONMENTAL MANAGEMENT 1994 NOW AVAILABLE

The Environmental Management program published *Environmental Management 1994* in February to convey the accomplishments that have been, are being, and will be achieved by the program. This 100-page report uses existing information to discuss Environmental Management as a national program in an easily understandable format and eliminates jargon, acronyms, and bureaucratic language whenever possible. National and site-level accomplishments are discussed as well as initiatives to improve program management, conduct risk assessments, prepare future land use plans, and meet Assistant Secretary Grumbly's six goals for the Environmental Management program. To obtain copies of Environmental Management 1994, contact the Center for Environmental Management Information at 1-800-736-3282. ★

CLEANING UP THE CESIUM PLOTS

The Department of Energy, the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation participated in a joint cleanup of several plots of contaminated land alongside the Clinch River on the Oak Ridge Reservation in Tennessee. In the 1960's, the plots were treated with cesium-137, a radioactive isotope, to research the effects of nuclear fallout on the environment. The plots were then surrounded by metal enclosures that helped prevent outward radiation exposure and horizontal spread of contamination.

While the plots themselves did not pose a long-term problem, it was decided that a remedial action was necessary to reduce the contamination level of soil associated with the plots and thus reduce the risk to humans and the environment. The contaminated soil was removed from the plots, packed in rectangular boxes, and transported to onsite underground silos.

Getting this job underway required bringing together many Department prime contractors and regulatory agencies, and those involved in the cleanup learned a tremendous amount about environmental restoration projects. ★

Workers, in protective clothing, cleaning up the cesium plots.

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Lab Opens New Treatment Facility

Congressman Bill Baker addresses audience at ribbon cutting.

The opening of Treatment Facility C at Lawrence Livermore National Laboratory in November 1993 marked a major milestone in the laboratory's ground-water cleanup effort. Treatment Facility C is a key element in halting the spread of contaminated ground water at the laboratory's western boundary and will be used in conjunction with Treatment Facilities A, B, and F to contain and remove contamination from ground water and soil beneath the laboratory site.

Scientists believe that Treatment Facilities A, B, and C, arrayed along the western side of the site, should be able to halt offsite flow of contaminated ground water and eventually retrieve contaminants that have already migrated offsite. The three facilities are also working with Treatment Facility F in the southeast quadrant of the site to help clean up contamination. These efforts will allow the laboratory to meet its commitment to keep contaminants from reaching Livermore city drinking wells.

The primary ground-water contaminants at the site include volatile organic compounds trichloroethylene and perchlorothylene, which are components of solvents and degreasers used at the laboratory since the 1940's. Fuel hydrocarbons, chromium, and tritium contamination are also being addressed in the cleanup.

A total of seven treatment facilities are currently planned, each specially designed to treat specific contaminants in its area. The plan is to bring contaminated water to the surface through extraction wells, then treat it using various technologies involving ultraviolet light/hydrogen peroxide, granular activated carbon, ion exchange, and air stripping. Vacuum-induced venting technology will be used to draw contaminants from the soil for treatment with granular activated carbon. The other four facilities are expected to be completed within two years, given projected funding levels.

Since 1989 when treatment began, Treatment Facilities A and B together have extracted and treated more than 80 million gallons of contaminated water. Most of the treated water is either returned directly to the ground, used in cooling towers, or used for landscape irrigation.

The total volume of volatile organic compounds in ground water is estimated to be approximately 200 gallons. The total volume in soil is estimated at about 50 gallons. Current estimates are that the cleanup could take about 50 years to complete; however, the laboratory cleanup team of hydrologists, engineers, and computer modelers is actively working on ways to reduce cleanup time and costs. ★

DOE Holds Two-Day Stand Down

On January 26 and 27, 1994, all Environmental Management program employees and key contractor employees participated in a "stand down" from their regular work to look at ways to bring down costs and shorten schedules of cleanup projects. Employees from organizations that support the program, such as procurement, finance, and safeguards and security, were also asked to participate. As part of the Stand Down, Assistant Secretary Grumbly held a video conference with the 14 sites around the country to answer questions, discuss common problems, and develop solutions.

Mr. Grumbly ordered this action in response to the *Project Performance Study,* which showed that projects in the Environmental Management program cost an average 32 percent more, take longer to complete, and have larger cost overruns than comparable projects in industry and at other Federal agencies. The study was commissioned by Environmental Management's Office of Oversight and Self Assessment and performed by Independent Project Analysis, Inc. of Reston, Virginia. It was completed in November 1993, and recommended improvements in project definition, project management, and contracting strategies and Federal ownership.

The Stand Down is a historic first for the Environmental Management program as well as the Federal Government and will shape the future of the program for many years. Independent Project Analysis, Inc. will monitor the progress in improving the program and will prepare a report every six months, using the original study as the basis for comparison. ★

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ARGONNE IMPROVES ITS RESEARCH PROGRAMS

Argonne National Laboratory in Illinois has reorganized its environmental research programs to enhance collaboration between scientists and make it easier for the Department of Energy offices and other agencies to tap into Argonne's environmental research capabilities.

"By putting all our environmental programs under a single administrative umbrella, we can become more user friendly for the Department and other agencies interested in the kind of environmental research and technology development we can provide," said Terry Surles, Argonne's new General Manager for Environmental Sciences.

About 20 percent of Argonne's $425 million operating budget supports research and development in environmental restoration, environmental policy and regulatory studies, global climate change, environmental impact studies, and the development of advanced analytical techniques to characterize and solve environmental problems.

"The complexity of environmental programs means that no single discipline can do it all," Surles said. "Combining the viewpoints and contributions from the many disciplines available at a multipurpose lab balances the final product. ★

SOLVING THE MIXED WASTE TREATMENT PROBLEM

FEDERAL FACILITY COMPLIANCE ACT

The Federal Facility Compliance Act makes Federal facilities subject to potential fines and penalties for violations of the Resource Conservation and Recovery Act, the law that sets requirements for the management of hazardous waste. The Act directs the Department to prepare a plan for developing mixed waste treatment capacities and technologies for each site at which the Department generates or stores mixed waste.

In compliance with the Federal Facility Compliance Act, the Department is developing Site Treatment Plans for each of the 48 sites in 22 States that are currently managing mixed waste. These plans will identify how the Department will provide the necessary mixed waste treatment capacity. To develop these plans, the Department is following a three-step process.

The first step is the development of Conceptual Site Treatment Plans. The Conceptual Site Treatment Plans, completed in November 1993, identify

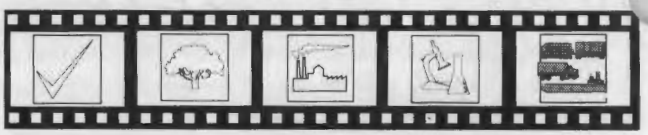
- preliminary information on the treatment technology and capacity needs for the mixed waste at each site;
- possible options for mixed waste treatment where capacity does not exist, and the technical, economic, and other issues associated with these options; and
- waste that requires further characterization or for which the appropriate technology has not yet been identified.

A national summary of the Conceptual Site Treatment Plans is being prepared for initial review and use in discussing the methods and locations for treating mixed waste.

The next step is to develop the Draft Site Treatment Plans that will be issued in August 1994. The Draft Site Treatment Plans will identify the preferred option for treating each site's mixed waste and a schedule for developing the necessary treatment capacity. To identify the preferred treatment option, the Department has developed a framework for reviewing and comparing the identified treatment options for the mixed waste at its sites. This framework focuses on identifying the waste streams for which the preferred treatment options can be easily identified first. Then, the Department and its regulators, working with the National Governors' Association, can focus their efforts on the mixed waste streams for which treatment options are less obvious. This strategy will help to reduce and simplify the number of waste streams likely to require in-depth discussions with the States and the Environmental Protection Agency. During this time, each site will also keep its local public informed.

The last step is to issue the Final Site Treatment Plans in February 1995. The final plans will identify the selected treatment strategies for the mixed waste that will be selected through discussions among the Department, the States and Tribes, and other interested members of the public. Upon completion, the Department will submit these plans to the appropriate State (or the Environmental Protection Agency, as appropriate) for approval, and a Compliance Order for implementing the plan will be issued. As long as the Department of Energy site is in compliance with the approved plan and the Compliance Order by October 1995, the Department will not be liable for fines and penalties. ★

Environmental Management Snapshots



In The Field...

Key Avenue Site, Columbus, Ohio: decontaminated floor and wall surfaces in the northwest corner of the ground floor of Building 6. Sections of the concrete floor also were cut to provide access to a contaminated drainage system.

Environmental Measurements Laboratory (EML), New York City, New York: published a report in January 1994 on the results from the analysis of the 39th set of environmental quality assessment samples. EML's quality assurance program is designed to test the quality of the environmental measures being reported to the Department by its contractors. One hundred and one laboratories participated in this analysis, and it is expected that over 125 labs will participate in the next analysis planned for later in the year.

Rocky Flats Plant, Golden, Colorado: developed the Mobile Gamma Survey Unit, a $1 million, one-of-a-kind Chevrolet Suburban equipped with computers and linked to satellites. The mobile unit produces three-dimensional color maps of plutonium pollution and can detect and measure naturally occurring and manmade radioactive materials found in the surface soil. Because it is cost effective, nonintrusive, quick, and thorough, the Mobile Gamma Survey Unit is currently used to enhance the Plant's soil sampling program and aerial surveys.

Uranium Mill Tailings Remedial Action Project, Albuquerque, New Mexico: trained two environmental engineers from Germany in the methods used by the United States for the environmental remediation of. former uranium milling sites. The engineers are employees of the German organization, WISMUT, responsible for the cleanup of the tailings and ground-water pollution that resulted from former East German efforts to provide the Soviet Union with uranium for nuclear fuel and defense purposes. As part of their training, the engineers visited sites in Texas, New Mexico, and Colorado in all phases of cleanup. Since 1991, the German Federal Ministry of Economics and the Department of Energy have been discussing cleanup methods for their shared problem.

Bechtel Becomes Hanford Environmental Contractor

The Department of Energy announced that Bechtel Hanford Inc. will be awarded a five-year contract worth $800 million for environmental restoration activities at the Hanford Site near Richland, Washington. Bechtel will be responsible for planning, managing, and executing a wide range of programs and projects in the Environmental Restoration program at Hanford. The Department of Energy stated that it would seek some changes to bring Bechtel's original planned contract in line with the recently announced contract reform initiatives of the Secretary of Energy and will also apply lessons learned from the Fernald Environmental Restoration Management Contract at its Fernald, Ohio, site.

There will be a planned four-month transition period in which cleanup responsibility will be transferred from Westinghouse (the primary Management and Operating contractor at Hanford) to Bechtel. During this time, the Department will develop an award fee plan with Bechtel that will place increased emphasis on incentives to improve performance and cost effectiveness in a number of areas. The Department's Richland Operations Office will have a detailed technical management plan in place to oversee the contractor's work prior to the end of transition. In addition, all health and safety standards and requirement will be in place before the end of the transition period.

As explained by Assistant Secretary Grumbly, "Bechtel has brought some of the best Superfund cleanup experts from all around the Nation together on the Hanford team. Now it is time to put these people to work and get on with the job of cleaning up the Hanford Site." ★

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COLUMBUS DECONTAMINATION AND DECOMMISSIONING

The Battelle Columbus Laboratories Decommissioning Project in Columbus, Ohio, has set a major objective for fiscal year 1994 — the safe removal of loose and fixed contamination from Building 3, a former materials building at the King Avenue site. The 3-story building, which contains 54,000 square feet, is one of 15 buildings at Battelle's Central Ohio facilities undergoing decontamination and decommissioning work co-funded by the Department of Energy. Material and equipment has been removed from Building 3, and all excess and obsolete chemicals and a large vacuum system were taken away. The decontamination of a beryllium lab and the clearing of a U-235 lab complex posed particularly challenging tasks, but by the end of work a total of 110 rooms were cleared of equipment and associated hoods, cabinets, and ducts.

With the loose radioactive material removed, the workers are now focusing on fixed contamination on walls and floors of the basement and ground floor of the building, using grit blast machines, jackhammers, and similar equipment. The next task will be the removal of the basement floor and contaminated drains. Building 3 will be the sixth building at Battelle's Central Ohio facilities to be completed in the project since operations began in 1989. ★

Building 3: BEFORE

Building 3: AFTER

THE SPENT FUEL CHALLENGE

The Department of Energy faces a significant challenge in managing spent nuclear fuel that is currently stored at sites throughout the Nation. Although there is a growing need for improved storage capacity, considerable concern also exists over the chemical, metallurgical, and physical condition of the spent nuclear fuel.

Over the past decades, the Department and its predecessor agencies have used uranium to fuel their nuclear reactors and provided nuclear fuel for use in other reactors. After the uranium is used for a period of time and no longer contributes efficiently to the nuclear reaction, it is considered spent. Spent nuclear fuel is fuel that has been withdrawn from the nuclear reactor and has not been reprocessed. The decision in 1992 to phase out reprocessing has resulted in a growing inventory of spent nuclear fuel in a national system that was originally designed to receive the fuel and actively process it into usable products rather than to store it for long periods of time.

The Department's spent nuclear fuel is managed by the Office of Environmental Management. Spent nuclear fuel produced from U.S. commercial nuclear powerplants is managed by the Department's Office of Civilian Radioactive Waste Management.

The inventory of Department-owned spent nuclear fuel is estimated to increase by approximately 2 percent over the next 10 years as a result of the spent fuel produced from the Naval Nuclear Propulsion Program and the Department's research reactors. Additional quantities exist at research reactors located at U.S. universities and in a number of foreign countries. As spent nuclear fuel is returned to Department facilities for storage, the United States needs to ensure its continued safe storage until it can be prepared for permanent disposal.

Recently, the Department completed an inventory of its spent nuclear fuel and an assessment of the environmental, safety, and health concerns associated with the current storage and handling of this material. In addition, two environmental impact statements are being prepared that examine various aspects of the impacts of receiving, transporting, processing, and storing Department-owned spent nuclear fuel. As part of that process, the Department hosted a series of public meetings in the fall of 1993 on foreign research reactor spent nuclear fuel to seek input on the scope and associated issues of the environmental impact statement under development.

Complex-wide spent nuclear fuel environmental impact statement activities include public information workshops pertaining to the transport, receipt, and storage of spent nuclear fuel. These workshops are planned for July and August 1994 at various locations throughout the country. The Department is also planning to host additional meetings in the near future. For further information regarding spent nuclear fuel, please contact John Jicha, Jr., Acting Director, Office of Spent Fuels and Special Projects (EM-37), U.S. Department of Energy, Washington, DC 20585 or call (202) 586-9441. ★

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STAKEHOLDERS HELP PRIORITIZE CLEANUP

In a quarterly public meeting at the Mound Plant in Ohio, stakeholders played an interactive board game called Priority. The game, which resembles Monopoly, simulates the decisions and priorities that must be made at Mound when limited funds are available.

The game started by giving the participants Mound's budget request and taking away funding due to budget reductions and program operating costs. The stakeholders played the game with their remaining funds. A lively discussion on an ordinarily dry topic resulted and made a visual impact on the stakeholders. Stakeholders who were usually very skeptical of the Department began defending the Department's choices and costs to other stakeholders. It was clear by the end of the meeting that this interactive approach was meaningful to the participants.

In addition to the game, a follow-up survey was mailed to Mound stakeholders for further input. The survey listed each Operable Unit at Mound, the work in progress, and the work planned by 1994. The public was then asked to prioritize each item, and return the cards to the Dayton Area Office. The results were communicated back to the stakeholders via a newsletter. ★

COMMENTS

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOLUME 3 NUMBER 3 FALL 1993

REVISED TEST STRATEGY FOR THE WASTE ISOLATION PILOT PLANT

The original test strategy called for real waste to be placed in bins and alcoves in rooms like this in the underground facility.

On October 21, 1993, the Department of Energy announced a revised test strategy for the Waste Isolation Pilot Plant. Under the new strategy, tests using simulated and real transuranic waste will be conducted in laboratories rather than in the underground facility. This revised test program addresses various concerns raised by the National Academy of Sciences, the Environmental Protection Agency, other independent reviewers, and stakeholders. "This is a major break with the last administration's approach, which frankly did not give full consideration to the concerns of the scientific community, EPA, and the public," said DOE Secretary Hazel R. O'Leary.

The Waste Isolation Pilot Plant, located in New Mexico, 26 miles from Carlsbad, was designed to dispose of transuranic waste in vast salt deposits 2,150 feet beneath the desert surface. These deep salt deposits are found primarily in stable geologic areas with an absence of fresh water. The easily mined salt formations self-seal around voids, such as the storage rooms created by mining. Thus, waste stored there will be naturally encapsulated over time.

The revised test program for the Waste Isolation Pilot Plant has a stronger scientific foundation, will provide data faster and more accurately for compliance demonstration, and is expected to realize an estimated cost savings of more than $100 million. "Ultimately, by 'following the science' we will put the EPA in a far better position to determine whether the facility meets environmental requirements and will be available to meet the pressing challenge of defense waste disposal," said Thomas Grumbly, Assistant Secretary for Environmental Restoration and Waste Management. Mr. Grumbly also reaffirmed his commitment that all future decisions about nuclear waste will be based on science, not politics. "The public," says Grumbly, "will stand for nothing short of scientific analysis in siting waste disposal facilities."

Over 100 other ongoing and planned studies will continue at the facility and other locations. Candidate sites for the waste tests include the Los Alamos National Laboratory and the Idaho National Engineering Laboratory. Under the revised test program, the management and operating contractor scope will no longer include maintaining readiness for the receipt and handling of waste. However, the scope of work will be revised to include additional compliance and engineering studies to directly support the certification process. The Department is working directly with officials in Carlsbad, New Mexico, to ease the potential economic impacts of the decision not to conduct waste tests at the facility. The Department does not envision any layoffs as a result of this revised test strategy. A plan summarizing the revised test strategy was given to the Environmental Protection Agency and key stakeholders for review in December. ★

See page two for our Perspectives column, which presents ideas and opinions from individuals or groups outside the Department of Energy.

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PERSPECTIVES... A continuing series of guest editorials

Margret Carde, Nuclear Waste Project Director, Concerned Citizens for Nuclear Safety.

How did it start? Did some public relations wizard come up with the idea of promoting nuclear waste dumps as local economic development programs? Mayor Bob Forrest of Carlsbad, New Mexico, testifying before the House Subcommittee on Energy and Power in 1992 about the Waste Isolation Pilot Plant, tried to explain the concept this way: "...when you go back and see what Senator Bennett Johnston did -- he is going around the country offering any State that will take a repository $100 million up front...Some people say we sold too cheap..."

In 1991, former Nuclear Waste Negotiator David Leroy advertised infrastructure and environmental improvements, public education, health care, recreation programs, direct financial assistance and general economic development programs, and the transfer of ownership of Federal properties to any government or Tribe willing to host a Monitored Retrievable Storage facility on their land. As one Native American representative said to me, "This is exactly what Tribes need...any Tribe would be foolish not to apply."

Targeting disadvantaged communities with bribes hides the real issue, that political considerations take precedence over analysis of risk, scientific conclusions, or evaluation of the questions of who benefits vs. who bears the cost of these facilities. However, now that it is accepted practice, the jobs-for-dump site program will be hard to stop. People expect to be compensated. Mayor Forrest wants a national transuranic waste center located in Carlsbad to substitute for the jobs projected to be lost when the Department of Energy withdraws its Waste Isolation Pilot Plant test plan. Fred Peso of the Mescalero Apache Tribe feels betrayed by Senator Bingaman's amendment that asks for a demonstration that "there is a reasonable likelihood that agreement can be reached among all of the relevant government officials in the vicinity of any proposed [Monitored Retrievable Storage facility] site" before the government gives away $2.8 million dollars.

Thomas Grumbly, Assistant Secretary for Environmental Restoration and Waste Management, has promised that future decisions about nuclear waste disposal facilities will be based on science, not politics. Fulfilling this pledge will be difficult, but an increasingly aware public will accept nothing less. ★

"Perspectives" is a regular feature of EM Progress. It allows individuals or groups outside of the Department of Energy to express their views about any aspect of the Environmental Restoration and Waste Management Program. If you have an editorial that you would like considered for inclusion in *EM Progress*, contact Beverley Heffernan, Office of Environmental Restoration and Waste Management, EM-14, U.S. Department of Energy, Washington, DC 20585, telephone (202) 586-3919.

HANFORD TRI-PARTY AGREEMENT REVISED

On September 30, 1993, the Department of Energy, the Environmental Protection Agency, and the Washington Department of Ecology completed negotiations on the Hanford Tri-Party Agreement that guides environmental cleanup at the former nuclear weapons production facility. The negotiations will result in significant changes to the way Hanford is cleaned up.

The tentative agreement calls for a new glassified waste form for the safe disposal of low-level waste, delays in the Department's high-level waste vitrification project to accommodate the emphasis on the new low-level waste treatment, improvements in tank safety by enhanced monitoring and an improved response program to leaking single-shell tanks, and a comprehensive approach to Hanford cleanup.

The protection of the Columbia River will be a top priority. The Department also agreed to reduce Hanford cleanup costs by $1 billion over the next 5 years by implementing many internal management reforms. To help achieve these savings, the Environmental Protection Agency and the Washington Department of Ecology have agreed to streamline their regulatory process.

The revised agreement is based on recommendations from a citizen task force formed to focus on tank waste issues and other input from residents and other stakeholders in the Hanford region during the six-month negotiation process. The agreement will not be finalized until it has been reviewed and commented on by the public during a 45-day public comment period that began in October. ★

Annual Oak Ridge Model Conference Held

The ninth annual Oak Ridge Model Conference was held August 23-26, 1993, to provide information on environmental restoration, waste management, technology development, and environmental education initiatives underway at the Oak Ridge facilities. More than 40 exhibits from industry, academia, and government were on display at the conference.

Pat Whitfield, Deputy Assistant Secretary for the Office of Environmental Restoration, was the keynote speaker. He discussed the Department's need to inform the public about environmental risks and cleanup actions at its sites. He also noted the difficulty in making cleanup decisions when cleanup costs are high and often outweigh the benefits. Mr. Whitfield cited examples of site cleanup plans that have been revised after the public questioned the amount of money it would take to clean up the site and only slightly reduce the risk.

The "model concept" for this year's conference involves the use of Department facilities and laboratories in the development and demonstration of approaches that can be applied to environmental cleanup activities and waste treatment and disposal. The hope, explains David Page, a Department of Energy program manager, is that "by sharing our expertise in these areas and fostering technology transfer, we can help solve similar problems at other sites throughout the country." ★

New Subcontracting Method Saves Millions

The Department of Energy expects to save approximately $75 million over the next 3 years by implementing an innovative contracting method for environmental restoration projects at the Rocky Flats Plant in Golden, Colorado. The contracting method, Master Task Subcontracting, provides fixed labor rates for three years, increases competitiveness, and holds subcontractors more accountable. Subcontractor performance is evaluated based on quality, safety, schedule, and cost control. Future work assignments are determined based on their performance evaluation.

Master Task Subcontracting is being implemented in several areas at the Rocky Flats Plant, but the most notable impact has been in the area of environmental work. The environmental work includes air monitoring; waste management; automated systems; sampling support; National Environmental Policy Act support; Quality Assurance; permitting and activities support; and Comprehensive Environmental Response, Compensation and Liability Act support. A total of 46 percent of the environmental task subcontracts were awarded to small businesses and small disadvantaged businesses.

Since implementation of Master Task Subcontracting in October 1992, subcontractor fees for environmental work have been cut by 55 percent. In addition, processing time to actually start the work has been reduced by an average of 57 percent. ★

New Remediation Approach Saves Time and Money

A new, streamlined method for remediating small sites under the Formerly Utilized Sites Remedial Action Program has proven successful and cost-saving in two separate projects - the Baker and Williams Warehouses in downtown Manhattan, New York, and Seymour Specialty Wire in Seymour, Connecticut. For small projects, such as those in Manhattan and Seymour, the Department has found that an expedited procedure can be utilized to effectively clean the site and still comply with all laws and regulations. This streamlined remediation consists of four major activities: identification and characterization of the site, evaluation and planning, remediation, and verification and certification.

The Baker and Williams Warehouses were remediated in two phases, beginning in 1990 and ending in July 1993. Over the course of the project, new and more effective procedures that improved remediation and health and safety techniques were implemented. The work consisted mainly of removing surface layers of asphalt-like flooring and some contamination on walls. All efforts were strictly coordinated and integrated to minimize the time necessary to complete the task.

The same procedure was used in remediating the Seymour Specialty Wire site. During the remediation of this site, 24,000 square feet of floors, walls, and overhead areas were decontaminated. In addition, 19 floor drains, 200 feet of expansion joint, and 1,400 square feet of asbestos floor tile were removed, generating 36 cubic yards of contaminated waste. Both sites are now in compliance with applicable guidelines.

Because it has proven an efficient and cost-effective approach, expedited remedial action is currently being planned for a number of other remedial action projects, including the Aliquippa Forge Site in Pennsylvania, and the Bliss and Laughlin Steel Site in New York. ★

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Laser Fluorescence Used to Detect Uranium at K-25 Plant

A laser technique to detect uranium on surfaces was successfully demonstrated at the K-25 Gaseous Diffusion Plant in Oak Ridge, Tennessee. The technique is based on the fluorescent/phosphorescent response of uranium. Fluorescence is the process by which a common organic, such as uranium, fluoresce (glow) when exposed to a stimulus such as laser light. The sensor system and methodology, known as Laser Induced Fluorescence, was developed with funding from the Office of Technology Development.

Many organic compounds may fluoresce at the same time and initially hide the presence of uranium. Uranium, however, continues to fluoresce for a short time after the laser light is removed. To prevent the masking of uranium by other elements, the system delays the activation of sensing equipment for a few fractions of a second after the laser pulse. This precise delay effectively isolates the presence of uranium. The current laser-induced fluorescence configuration includes an ultraviolet laser source, an intensified charge-coupled device, and a video monitor for instantaneous viewing. Video images can also be electronically stored for further analysis and display.

At Oak Ridge, a forklift-mounted laser-induced fluorescence system was used inside the K-27 building to scan surfaces from distances up to 100 feet. Uranium was detected on a variety of surfaces, including the seal rings of gaseous diffusion compressors. Uranium concentrations were later quantified with hand-held detectors.

From these initial results, laser fluorescence appears to have value as a screening tool for decontamination and decommissioning operations. Mr. Roy Sheely, manager for the Radiation Contamination Project at K-25, said that, "If we can use the [laser-induced fluorescence] system as a binary filter in the initial stages of [decontamination and decommissioning] to separate contaminated components from clean ones, we have the potential to save tremendous amounts of time and money."

On the strength of this demonstration, a portable version of the system will be developed. "With a [portable] system like this," said Mr. Sheely, "[decontamination and decommissioning] personnel will be able to walk through rooms and quickly scan for the presence of uranium. Once the contamination is pinpointed, further activities can be more effectively directed and managed." Additional laser-induced fluorescence configurations, including an airborne system for the detection of uranium over geographically large areas, are also being developed. ★

Students Learn About Environmental Cleanup

A representative of the Oak Ridge Y-12 Plant Fire Department zips a curious sixth-grader into one of the training suits the firemen use.

Middle-school students in Tennessee learned first-hand about some of the many environmental challenges facing our world at the 1993 EnvironMENTAL Fair held on October 8, 1993. This was the second annual EnvironMENTAL Fair, and over 3,500 sixth-grade students and their teachers attended the day-long event.

Activities included "Loserville Landfill," an obstacle course demonstrating the importance of recycling; "Pollution Detective," demonstrating a direct sampling spectrometer used to identify chemical pollutants; and environmental arts and craft activities.

Fair organizers hoped to increase student awareness of local and global environmental issues and encourage them to pursue environmental careers. "Young people need to understand the importance of environmental restoration. Environmental restoration is ongoing, and those students who attended the fair will be affected–either as concerned citizens or scientists, engineers, and technicians actually carrying out the cleanup work," explained Bill Adams, assistant manager for Environmental Restoration and Waste Management at the Oak Ridge Operations Office.

Students, teachers, and Department of Energy employees agreed that the fair is an effective, fun, and educational experience for all involved. Said Knoxville Vine Middle School teacher Gloria McElroy, "Students have to have 'hands-on' experience to develop an interest in any subject. An event like the EnvironMENTAL Fair turns passive learning into active learning." ★

TANK PUMP BEGINS SECOND PHASE OF TESTING

On October 21, 1993, scientists at the Hanford Site began the second test phase of Tank 101-SY's experimental mixer pump. The pump was installed in early July 1993 to stir the radioactive sludge in the tank. Engineers hope that the mixing process will allow the sludge to gradually release hydrogen gas that is retained in the bottom of the tank. Historically, when enough gas accumulated, it resulted in gas release events (referred to as burps). A risk associated with these release events was the potential for an in-tank explosion.

The first phase of testing was successfully completed in July 1993 and demonstrated that low-speed mixing could be performed with no serious safety concerns regarding large volume gas releases. The second phase consists of a new series of tests in which the pump's speeds and times of operation will increase. Through these tests, Hanford scientists are trying to find the best combinations of speeds, times, and nozzle angles. After this current phase, more advanced tests may be conducted with the pump through May 1994. ★

FIRST SITE-SPECIFIC ADVISORY BOARD MEETS

The Department of Energy's first site-specific advisory board, the Fernald Citizens Task Force, held their first meeting on October 14, 1993. At that meeting, the task force formally adopted its charter and ground rules and agreed that outside staff is necessary for it to proceed with its deliberations on the strategic issues related to Fernald restoration.

Fernald's citizens advisory group is the first to be formed under the auspices of the Interim Report of the Federal Facilities Environmental Restoration Dialogue Committee, or Keystone report. The task force was formed to seek consensus among stakeholders concerning cleanup strategies, future site uses, and other environmental restoration issues. The Department has agreed to carefully consider the task force's recommendations in its decisionmaking processes, though its recommendations are not legally binding.

The Fernald Citizens Task Force expects to first address the issue of future land use. The task force meets monthly. ★

CHARACTERIZATION WORK BEGINS AT SAVANNAH RIVER

The South Carolina Department of Health and Environmental Control and the Environmental Protection Agency have approved the commencement of characterization work at six inactive waste sites in the Environmental Restoration Program at the Savannah River Site. These characterizations are the first at Savannah River under the new Federal Facilities Agreement, the integrated Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation and Liability Act. Work began at the F-Area Burning/Rubble Pits, the first site to be characterized, in early May.

In characterization processes (based on work plans), teams of scientists and technicians set up monitoring devices at a waste site to obtain samples of soil, ground water and, if present, surface water. Work plans, which are proposed ways to test waste for hazardous and/or radionuclide contaminants, must be approved by regulators before the work can be initiated. Work plans have been approved for the six inactive waste sites at the Savannah River Site. These sites include the F-Area Burning/Rubble Pits, L-Area Oil and Chemical Basin, Tank 16, Old F-Area Seepage Basin, D-Area Burning Rubble Pits, and Silverton Road Waste Site. Once the characterization process is completed, the resultant information is used to determine options for possible remediation at the site.

The F-Area Burning/Rubble Pits is the first of many inactive waste sites at Savannah River Site to be characterized. Dean Hoffman, manager of the Environmental Restoration Assessments Program, says this effort is a sign of tangible progress. "The work plan approvals we have gotten this year will set the pace for extensive cleanup over the next six years. F-Area characterization work shows we're making real progress. It's a visible sign of important work being accomplished." ★

INEL COMPLETES WASTE TREATMENT CAMPAIGN

In October 1993, the New Waste Calcining Facility at the Idaho National Engineering Laboratory completed Campaign H-3. During campaigns, the facility thermally treats highly acidic, radioactive liquid waste stored in the tank farm into a stable, granular solid known as calcine. The calcine is then stored in near-surface stainless steel bins that are situated within concrete vaults. During this campaign, the facility processed over 775,000 gallons of high-level liquid waste. The facility is now entering a 30-month maintenance period and will begin Campaign H-4 in 1996.

EM SNAPSHOTS

IN THE FIELD...

Idaho National Engineering Laboratory: completed the first transfer of 18 spent nuclear fuel assemblies from Building CPP-603 to Building CPP-666. This first spent fuel transfer campaign began on November 19, 1993, and was completed during December 1993. More transfer campaigns are planned for the coming year. The balance of the spent fuel currently stored in Building CPP-603 is scheduled to be removed by the year 2000.

Battelle Columbus Laboratories: received a Department of Energy Certificate of Appreciation recognizing their emergency planning work. This work brought emergency service providers from two counties closer together with a series of planning sessions, classroom training, and coached drills focusing on the decommissioning project. Battelle provided training to 225 emergency response personnel on recognizing and working in radiologically contaminated environments. In return, Battelle and Department staff received training in the Incident Command System used by Ohio fire departments to coordinate emergency response activities.

Uranium Mill Tailings Remedial Action Project: received its first long-term surveillance license from the Nuclear Regulatory Commission for a site located in Spook, Wyoming. Cleanup of the site was completed in the fall of 1989 when more than 180,000 cubic meters of uranium mill tailings and other contaminated materials were placed in an inactive open pit mine on the site.

Nevada Operations Office: completed its first closure under the Resource Conservation and Recovery Act. The project involved the characterization and remediation of a portion of the Area 23 Landfill near Mercury on the Nevada Test Site. This landfill had been used for approximately 25 years to dispose of sewage, sanitary waste, aerosol cans, construction debris, noninfectious medical waste, and hazardous waste. The closure consisted of the installation of impermeable membrane caps to prevent infiltration of precipitation and neutron probe access tubes to monitor moisture conditions beneath the cap.

Also, the Navada Operations Office awarded a $30,000 grant to be used for the development of the 96-acre Whitney Mesa Educational Nature Preserve in Las Vegas, Nevada. Development of the preserve will provide students with an outdoor, hands-on laboratory to study science, history, and environmental issues. A large portion of the grant will be used to develop trails and learning stations. The remainder of the grant will be used for assessment activities such as identification of plants, animals, geologic features, and archaeological sites.

Uranium Mill Tailings Remedial Action Project: began construction of a radon cover for the uranium mill tailings disposal cell at the inactive Susquehanna-Western uranium processing site near Falls City, Texas. More than 4.5 million cubic meters (5 million cubic yards) of low-level radioactive uranium mill tailings, from onsite and offsite locations, have been consolidated into one disposal cell. The tailings are now being covered with 91.4 centimeters (36 inches) of clay, 76.2 centimeters (30 inches) of growth medium, and 15.2 centimeters (6 inches) of topsoil. When the work is completed in early 1994, the cell will meet Environmental Protection Agency requirements for longevity, radon emission control, and ground-water protection. The site will be licensed by the Nuclear Regulatory Commission and monitored under the Department's long-term care program for completed disposal sites.

Environmental Team Tackles Treatment Challenge

A unique team of scientists from industry, universities, Federal agencies, and national laboratories is developing state-of-the-art incinerator technology to treat mixed waste. The incinerator, called a fluidized bed unit, would heat mixed waste, destroy the hazardous components, and filter off-gases.

The current design could treat 180 to 240 pounds of waste an hour and would include up to a 40-to-1 reduction in volume. This process could destroy more than 99.9 percent of the hazardous material by converting it into water, carbon dioxide, and radioactive ash.

Although research is proceeding, no construction or siting decisions have been made. Researchers are now focusing on fluidization studies, developing off-gas monitoring techniques, and working with regulators on licensing issues. Thermal tests will begin soon using nonradioactive feed materials in a licensed fluidized bed unit in California. ★

The Green Approach to Cleanup

The Savannah River Site is taking the "green approach" to environmental cleanup using natural vegetation to help enhance ground-water remediation. The Surface Enhancement Task, also termed the green approach, experiments with methods to minimize the surface infiltration of rainwater into the contaminated ground-water aquifers near the F/H Area Seepage Basins.

The green approach studies ways to improve runoff from the area and increase water uptake by vegetation. Runoff will be improved by constructing grass-covered ditches and fertilizing existing vegetation.

Revegetation is another earth-friendly method of the green approach. The loblolly pine has been preliminarily identified for use in the revegetation areas. In addition to reducing the recharge to contaminated aquifers, the new vegetation will also provide a habitat for animals. ★

Workshop Emphasizes Standards-Based Management

On November 2-3, 1993, the Department held a workshop forum in Reston, Virginia, to address the implementation of a standards/requirements program for managing environmental, worker, and public safety and health protection. Assistant Secretary for Environmental Restoration and Waste Management Thomas Grumbly called for the DOE Standards/Requirements Program Workshop to enhance dialogue between contractors, Department Headquarters, and field management to answer questions and address issues affecting the successful implementation of the program.

The standards/requirement program will transfer the Department's traditional expert-based management system to a disciplined standards-based system for managing operations related to environmental, worker, and public health and safety activities. Requirements, and the standards to which the requirements will be implemented, will be documented and used as the basis for managing operations and for subsequent program oversight. A standards-based management system is essential to the Department's ability to adapt to the changing mission. In addition, it ensures that retiring or transferring personnel do not take with them the only understanding of how and why specific activities and controls are being used. The program addresses these and other issues raised by the Defense Nuclear Facilities Safety Board in Recommendation 90-2.

The workshop forum, which hosted over 210 participants, included executive briefings, status reports, questions and answer periods, and breakout sessions of smaller work groups to discuss specific topic areas. For the breakout sessions, workshop participants divided themselves into six groups to separately focus on the implementation plan, the standards/requirement program itself, the format and content of required documentation, the approval process, the compliance evaluation process, and the identification of future goals.

The workshop concluded that the high priority the Department is placing on this standards/requirements program is clear and understood by all the participants. Sufficient understanding and direction is in place to allow all of the contractors to proceed with developing their site and facility-specific Standards/Requirements Identification Documents. The subsequent use of these documents as the basis for environmental, worker, and public safety and health protection programs will help ensure a clear, mutual understanding of expectations between contractors and the Department. In addition, both Defense Programs and the Office of Environmental Restoration and Waste Management accepted commitments to work closely with the field organizations to address budget and resource questions; to issue format, content, and compliance evaluation guidance; to ensure full coordination with other related programs; and to finalize needed approval and exemption processes. ★

GRUMBLY MEETS WITH EMAC

The Environmental Management Advisory Committee met on December 14 and 15, 1993, in Alexandria, Virginia. Two significant changes resulted from this meeting: the committee's new expanded mission to serve as a board of directors to Assistant Secretary for Environmental Restoration and Waste Management Thomas Grumbly and the announcement of new cochairmen.

Assistant Secretary Grumbly described his vision for the board by discussing major issues facing the program and asked for more effective involvement in problem solving. These issues include safety initiatives, new research and development efforts, compliance requirements, and how the Department does business with the private sector.

Senior program staff also presented issues for discussion. Topics included new Congressional requirements, safety initiatives, and the recent Environmental Management Cost Study. The Federal Facilities Compliance Act process and the Programmatic Environmental Impact Statement were also discussed. The committee reviewed facility transition issues, the progress of Site-Specific Advisory Boards, site risk assessment, and environmental research and development.

Mr. Douglas Costle, a past Administrator of the Environmental Protection Agency (EPA), and Mr. Alvin Alm, a past Assistant Administrator of EPA, were selected as the new cochairmen of the committee. Dr. Glenn Paulson, the former chairman, has accepted an offer by the Assistant Secretary to remain on the committee in a key role related to environmental restoration technologies. ★

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOLUME 3 NUMBER 2 SUMMER 1993

NEW ASSISTANT SECRETARY GRUMBLY'S PRIORITIES FOR THE FUTURE

When he was sworn in as the Assistant Secretary for Environmental Restoration and Waste Management on May 27, 1993, Thomas P. Grumbly hit the ground running and has kept the pace on implementing his priorities for environmental management programs. As stated in testimony before the House Committee on Science, Space, and Technology Subcommittee on Energy, Mr. Grumbly is acting on six major priorities: health and safety, management controls, land use policy, outcomes and tangible results, technology development, and stakeholder initiatives.

Beginning with his confirmation hearings, Mr. Grumbly has repeatedly stated his commitment to address risks at DOE sites and ensure health and safety for Department employees and the public. Accordingly, the Office of Environmental Restoration and Waste Management is developing better risk assessment tools and putting together a comprehensive review team to identify the long-term exposure risks at DOE sites.

To better manage taxpayers' dollars, Mr. Grumbly is promoting initiatives to increase contractor accountability, reduce costs, and increase productivity. His goal is a program that is "in control" managerially and financially. This program would include better financial and accounting controls, enhanced cost-estimating capabilities, and independent cost estimations to better manage contractors.

Mr. Grumbly believes that land use policy is key to the environmental management cleanup mission. By determining the future use of a particular facility, the Department can effectively clean it up to a level that is suitable for its intended use.

To ensure that the environmental management program is "outcome oriented," Mr. Grumbly wants to achieve measurable progress at the sites and inform the public of the progress in a timely manner. To achieve such progress, he suggests:

- focusing technology development activities on major DOE cleanup problems;
- adopting a systems engineering approach that considers multiple functional areas, collective requirements, and minimum standards developed by a broad scope of professional expertise;

(Continued on page 2)

Prior to accepting his new position as the Assistant Secretary for Environmental Restoration and Waste Management, Mr. Grumbly was the President and Chief Executive Officer of Clean Sites, Inc. Clean Sites is a nonprofit group that facilitates cleanup of hazardous waste sites through site management, dispute resolution, and policy analysis. Previously, Mr. Grumbly directed the Health Effects Institute in Massachusetts and was a partner in the Boston consulting firm, Temple, Barker and Sloane, Inc. He also worked as Staff Director for the Subcommittee on Investigations and Oversight of the House Science and Technology Committee, which was chaired by then representative Albert Gore, Jr. (1981-1982).

Mr. Grumbly received his Bachelor of Arts in Government, cum laude, from Cornell University in 1971. He then completed his Master of Arts in Political Economy from the University of Toronto in Ontario, Canada, in 1972. He also received a Master in Public Policy from the University of California in Berkeley in 1974.

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- maximizing working relationships with the private sector; and
- optimizing stakeholder involvement.

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Project managers from DOE, the Environmental Protection Agency, and the State of Idaho signed a record of decision in June 1992 to take action to clean up 6 areas where unexploded ordnance was found. Following a public comment period, the agencies selected detonation (explosion) and disposal onsite with offsite incineration of contaminated soil as the cleanup remedy.

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Although site employees may hear ordnance being detonated, neither they nor the general public are at risk. Any contaminants released to the atmosphere during ordnance detonation are within permissible levels and are not a public health hazard. The project is expected to be completed by November 1993. ★

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Currently, DOE is cooperating with regulators in conducting an intense investigation of these waste shipment practices, including a records review at four Martin Marrietta-operated sites and audits at six additional sites. DOE is also reviewing the site-generated standards and has defined national criteria for the unrestricted release of waste from radiation control areas. These measures should result in increased efficiency and consistency in DOE waste management practices. ★

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ER '93 Set for October 24-28

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This year's theme, "Meeting the Challenge," emphasizes safety, cost effectiveness, environmental protection, regulatory compliance, risk management, cleanup progress, technology, and public involvement factors necessary in environmental remediation. State and Federal regulators, universities, private industry, and the public will be participating. There is no registration fee to attend the conference, but pre-registration is required.

The 4-day symposium offers an opening plenary, a luncheon, paper and poster sessions, workshops, a technical exhibition program, and tours of the Savannah River Site. For more information, contact Donna Martin, Meeting Organizer, at (803) 644-6791. ★

Alaska Cleanup Planned this Summer

Due to local concerns, DOE completes the cleanup of the Project Chariot radioactive waste site at Cape Thompson in northwestern Alaska this summer.

The Project Chariot site was part of President Eisenhower's "Atoms for Peace" initiative to investigate and develop peaceful uses for nuclear explosives. In 1962, studies were conducted to test how radioactive material moved through tundra soil. At the conclusion of the 6-day experiment, contaminated soil was removed to a common location and covered with approximately 4 feet of uncontaminated soil, creating a mound. In 1992 and 1993, however, no radiation dose rates above background could be measured on top of the mound.

Despite the lack of measurable radioactivity at the site, DOE responded to the concerns of local inhabitants and has initiated removal of the mound to a licensed low-level radioactive waste disposal site in the lower 48 States. Afterward, DOE will conduct surveys to ensure that no radioactive material is left in the area. Local village and borough representatives will provide oversight along with the Alaska Department of Conservation. ★

GRUMBLY VISITS THE WASTE ISOLATION PILOT PLANT

In his first hands-on review of the Waste Isolation Pilot Plant (WIPP) project, Assistant Secretary Grumbly visited Carlsbad and Albuquerque, New Mexico, on June 22-23, 1993. During that time, Mr. Grumbly met with a variety of Carlsbad and State officials, including Mayor Bob Forrest, Governor Bruce King, and Attorney General Tom Udall; State legislators; environmental group leaders Dan Hancock and Margaret Carde; and Albuquerque Operations Office employees and contractors. Several hours were spent touring the WIPP facility.

Mr. Grumbly said that he expected the WIPP program to be "a success story." He was impressed with what has already been achieved at WIPP, noting the facility has "real potential to be a long-term solution to our [transuranic] waste storage problems." In addition, he encouraged WIPP employees and contractors to continue their focus on determining compliance with disposal standards and work toward greater and more meaningful participation with stakeholders.

Following his visit, Mr. Grumbly held a WIPP Program Review, a landmark gathering of stakeholders and program managers, on July 30, 1993, in Washington, D.C. Over 80 stakeholders were invited to participate in a candid exchange about the program's status, issues, and challenges. Mr. Grumbly committed the Department to follow-up discussions on WIPP to address related topics, such as implementation of the Federal Facility Compliance Act and the long-term management of pre-1970 buried waste. ★

UO_3 PLANT COMPLETES MISSION AND PREPARES TO SHUT DOWN

On Saturday, June 12, 1993, the UO_3 plant at the Hanford Site in Richland, Washington, was safely restarted and began stabilizing its uranium contents. During the first day of operation at the plant, approximately 200,000 gallons of uranyl nitrate hexahydrate solution were converted to a stable uranium trioxide powder. This process reduces the volume of waste and places it in a safer form for storage. Now that the waste at the UO_3 plant has been processed, activities have shifted to prepare the plant for decontamination and decommissioning. Nitric acid, recovered during the stabilization process, is being shipped to the PUREX Plant, and contaminated rainwater is being processed to recover uranium. When processing is complete, the process systems will be cleaned.

UO_3 was built in the 1950's to recover uranium for recycling into the defense production system at Hanford. Prior to this run, the plant was shut down to upgrade safety equipment in the late 1980's and experienced a prolonged stall in operations in part due to the change in Hanford's mission. This campaign was the culmination of two years of planning and teamwork by Westinghouse and Richland Operations Office employees. ★

PANTEX PLANT ENHANCES PUBLIC INVOLVEMENT PROGRAMS

DOE officials at the Pantex Plant in Amarillo, Texas, have developed and implemented extensive public participation and stakeholder involvement initiatives to enhance community awareness of the Pantex Environmental Restoration Program.

Public meetings are being held to inform the public of current site activities, respond to public concerns or questions, and solicit comments on proposed activities. The increase in community activities at Pantex can be attributed to the Pantex Community Relations Plan and the Public Information Coordination Group. The Community Relations Plan defines specific community involvement activities including issuing press releases; preparing and distributing factsheets, brochures, and other materials; and placing key program documents in public reading rooms. The Public Information Coordination Group, comprised of local residents, reviews activities at the site, reports to the public on the status of activities, and communicates the concerns of citizens to DOE.

The Pantex Plant is the Nation's site for final assembly and disassembly of nuclear weapons. ★

IMPROVING OPERATIONAL PERFORMANCE

The environmental management program's Office of Operations Assessment helps operations offices and contractors develop programs to improve performance in the areas of operations, maintenance, training, and radiological control. Recently, environmental management personnel travelled to the K-25 Site at Oak Ridge and facilitated the improvement of a work control system used at the Toxic Substances Control Act Incinerator. Participants in this improvement effort praised the revised system and the approach used. More trips are planned for other DOE facilities. For more information, contact the Office of Operations Assessment at (202) 586-0383. ★

A New Cleanup Process at Rocky Flats

A new cleanup technology, called dustless decontamination, is removing radioactivity from concrete walls and floors at DOE's Rocky Flats Plant in Golden, Colorado, in a way that is safer to workers and the environment. This "dust-busting" system removes contaminants without chemicals such as stripper solvents used by current decontamination procedures but discouraged by the Resource Conservation and Recovery Act.

Depending on the size of the surface to be cleaned, dustless decontamination uses either a piston device or a needle gun in coordination with a vacuum system. The pistons pound repeatedly to crush the upper layer of the contaminated concrete surface. Then the radioactive contaminants, concrete, and paint particles are sucked up through a hose by the vacuum system directly into a waste drum without creating any dust. The vacuum system is equipped with filters to keep particles out of the work environment. For hard-to-reach-surfaces, a hand-held needle gun attached to a vacuum and filter system is used instead of the piston.

Dustless decontamination could have widespread applications at Rocky Flats, a nuclear weapons parts plant that has several building interiors with surface radioactive contamination. In addition, this technology could prove useful throughout the energy, defense, and nuclear industries due to the need for decontamination methods that do not generate chemical waste.

After a 6-month successful demonstration, this technology, which can decontaminate up to 30-square feet per hour, is scheduled for application in several other plant facilities later this year. ★

Male sage grouse displaying mating plumage

Sage Grouse to Receive Help from UMTRA

A wildlife assistance program conducted by the Uranium Mill Tailings Remedial Action program at its site in Gunnison, Colorado, is making a big difference in preserving the quality of life for sage grouse living in the surrounding area. Found in the high sage desert areas of the western United States, sage grouse are native to this part of the country. The cocks are about the size of a small turkey, and the hens are somewhat smaller. One of the flocks in Colorado inhabits an area surrounding the disposal cell for mill tailings from the project site in Gunnison, Colorado.

During planning for the Gunnison remedial project, a site for the disposal cell was chosen based on technical criteria to ensure containment of the mill tailings. However, the site was found to be located in an area inhabited by the sage grouse. To make certain that the sage grouse range was impacted as little as possible by site operations, some very special arrangements had to be made. The first objective was to design the haul road and disposal cell to minimize disturbing the birds. When the project is completed, plans are to narrow the width of the 28-foot-wide haul road to 14 feet, thereby reducing casual use by public traffic. In addition, reclaimed areas will be seeded to replace the native plants. Other actions include the installation of 4 Wildlife Water Guzzlers and improving 7 springs and wet meadows in a 1.5-square mile area near the cell. The water guzzlers will provide water for a herd of antelope as well as the sage grouse.

Because the disposal cell is sited on Bureau of Land Management land, DOE has provided substitute land to let the grazing allotment in the area of the project lie dormant for three years following completion of the project. This will permit vegetation to return to its original condition. Finally, the Department hired contractors to conduct lek counts and brood surveys over a period of several years to determine any adverse effect that the project may have on the mating habits of the flock. Leks are clearings where the mating rituals of the sage grouse take place. The objective is not to get an actual count but to determine population trend — either up or down from the previous year.

One other important mitigation effort is that shipments to the cell will not start until mid-June, well after the sage grouse mating season is over. All of the sage grouse work has been done with the cooperation of the Colorado Division of Wildlife and the Bureau of Land Management. ★

EM SNAPSHOTS

IN THE FIELD...

Hanford: Successfully installed a test pump in the Hanford high-level waste tank 241-SY-101 in Richland, Washington. This 19,000-pound mixing pump is designed to reduce the build-up and periodic venting of potentially flammable hydrogen gasses from the 1,050,000-gallon, high-level waste tank. The purpose of this test is to determine if mixing the liquid waste at the top of the tank with the thicker sludges in the tank bottom will promote a continuous release of gasses at safe concentrations. Pump testing will continue for several months under controls based on rigorous safety criteria. Once completed, the test will help determine if this is a viable technology for reducing the hazards associated with flammable gases in this tank and possibly in other tanks.

Oak Ridge Operations Office: Recognized 8 of the 26 project teams that were nominated to receive awards for their waste minimization efforts at Oak Ridge. Through efforts of the nominated teams, DOE Oak Ridge avoided the generation of significant quantities of hazardous, low-level, and mixed waste. In addition, over $8 million in waste handling costs was avoided. Since some of these projects have been implemented at other DOE facilities, it is estimated that up to $23 million will be saved DOE-wide.

Formerly Utilized Sites Remedial Action Program: Completed an expedited remedial action at the Baker and Williams Warehouses in New York. The Baker and Williams Warehouses is a complex of three adjacent, paired, eight-story warehouses in downtown Manhattan that became contaminated from pitchblende storage during the Manhattan Project. The first pair of warehouses was remediated in 1991, the second did not require remediation, and the third pair was remediated between May and July 1993.

Nevada Operations Office: Awarded 10 grants, totalling $258,271, to 9 educational institutions including school districts, universities, and a Native American education center in California. The grants were made under DOE's Science and Technology Education Program. The program was started in 1990 to promote mathematics and science education through innovative teaching methods.

Also, selected five companies to test technologies for removing radioactive materials from Nevada Test Site soils. Each company will test their state-of-the-art systems at a "bench scale" level using controlled levels of Nevada Test Site soils. At the conclusion of the bench scale test, one or more of the most promising techniques may be selected for larger "pilot" field tests.

Weldon Spring Site: Hauled the first load of the approximately 100,000 cubic yards of contaminated material from the quarry at the Weldon Spring Site in Missouri to the chemical plant site on May 27, 1993. Removal of the quarry bulk waste was the subject of a record of decision signed in September 1990 by the Environmental Protection Agency and DOE. The project consists of excavating rubble, drummed waste, sludge, soil, and other materials contaminated with radionuclides from the quarry building and chemicals buried to a depth of 40 feet. The waste was generated by a U.S. Army Ordnance plant as well as the Atomic Energy Commission that occupied the area earlier. The quarry cleanup was mandated to protect the adjacent St. Charles County well field water supply from possible contamination.

TECHNOLOGY BRIEFS

DEPARTMENT AND INDUSTRY FORM PARTNERSHIPS

The Office of Environmental Restoration and Waste Management supports cooperative agreements to enhance partnership arrangements and industry access to DOE-developed technologies. Seventeen agreements supporting environmental management research and development programs have been signed by six national laboratories. Four of these agreements involve a small business industry partner. The Cooperative Research and Development Agreements span various areas from site characterization to robotics to bioremediation. For example, bioremediation technology specified in an agreement between Oak Ridge National Laboratory and Ogden Environmental Services will be demonstrated on contaminated water at a spent uranium mine in Germany. An agreement between the Idaho National Engineering Laboratory and Rotron to develop and demonstrate a biofiltration technology for treatment of hydrocarbons in soils was selected by *Research and Development Magazine* to receive a prestigious 1993 "R&D 100" award. ★

SAFE SOLVENTS TESTING LABORATORY

Solvents are used extensively as cleaners, degreasers, and paint strippers in a wide array of processes. These products are often carcinogenic and toxic when exposed to the air and water. The Safe Solvents Testing Laboratory is a new spin-out business based on software/database developed at the Idaho National Engineering Laboratory under the DOE/Department of Defense Solvent Utilization Handbook program. The small minority-owned business markets its testing and database services to manufacturers claiming to produce safe solvent substitutes. The technology transfer services of the Idaho National Engineering Laboratory helped start the business. ★

DYNAMIC UNDERGROUND STRIPPING

Volatile organic compounds are among the most prevalent contaminants at DOE sites. Dynamic Underground Stripping, developed at the Lawrence Livermore National Laboratory, uses steam injection for rapid cleanup of localized underground toxic chemical spills. The technology uses steam injection, vacuum extraction, direct electric heating, and tomographic geophysical imaging for the cleanup of saturated and unsaturated soil zones. This technology is 25 to 40 percent faster than baseline pump and treat technologies. Technology transfer services at Lawrence Livermore are developing a commercialization plan for licensing Dynamic Underground Stripping and other spin-off technologies for industry. Commercial applications for the technology include powerplants; chemical plants; refineries; and other fuel, chemical, or solvent storage or dispensing operations. ★

STREAMLINING CHARACTERIZATION

DOE, the Department of Agriculture, and the Commodity Credit Corporation recently cosponsored the demonstration of a process that dramatically streamlines site characterization at hazardous waste sites. The demonstration was conducted by Argonne National Laboratory.

The Expedited Site Characterization process is designed to characterize sites faster, more accurately, less intrusively, and at lower costs than traditional characterization methods. This new process integrates and uses multiple technologies to produce decision-quality data. A multidisciplinary team reviews data, visits and examines the site, and selects multiple technology options before preparing a workplan. The entire team then participates in the field program, performing several activities at the same time and jointly reviewing the results at the end of each day.

The process was demonstrated at an abandoned Department of Agriculture site in York, Nebraska, in July 1993. Participants included officials from DOE; other Federal agencies; State governments; universities; and research and development, environmental services, oil, and computer companies.

DOE's Office of Technology Development within the Office of Environmental Restoration and Waste Management has taken the initiative to promote the use of this process for many DOE site characterization activities. ★

OAK RIDGE BECOMES HOME FOR TWO ENVIRONMENTAL CENTERS

In May 1993, the centers for Environmental Technology and Waste Management officially opened at the K-25 Site in Oak Ridge, Tennessee. Representatives from DOE and Martin Marietta Energy Systems; industry leaders; and local, State, and national officials participated in the dedication ceremony.

The centers will accelerate the development, demonstration, and commercialization of environmental restoration and waste management technologies for DOE, other Federal agencies, and the commercial sector to help solve the Nation's waste management problems. The centers will provide private firms and other partners quick and easy access to the Oak Ridge site. At the site, they can test environmental restoration and waste management ideas and demonstrate practical solutions using a controlled complex with all necessary support services including 3,000 scientific and technical experts, unique facilities, and world-class laboratories. ★

EMAC Meets to Discuss Rocky Flats Transition

The Environmental Restoration and Waste Management Advisory Committee (EMAC) held their fifth meeting in Golden, Colorado, from June 16-18, 1993. The meeting focused on Rocky Flat's public participation, other programmatic issues, and transition from production to cleanup.

Representatives from the Rocky Flats Local Impacts Initiative, Colorado Council on Rocky Flats, Colorado Environmental Protection Agency, the State of Colorado, local government, and other groups accompanied the committee on a site tour and participated in panel discussions. Discussions focused on public participation experiences at Rocky Flats, facility transition, and management issues. During an evening public comments session, discussions focused on facility transition, site-specific advisory boards, medical surveillance, monitoring current and former workers, cost management, and public involvement in cleanup decisions.

EMAC's next meeting will take place in Idaho the week of September 20, 1993. For information, call Jim Melillo, Executive Secretary of the EMAC Committee, at (202) 586-4400. ★

Comments

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

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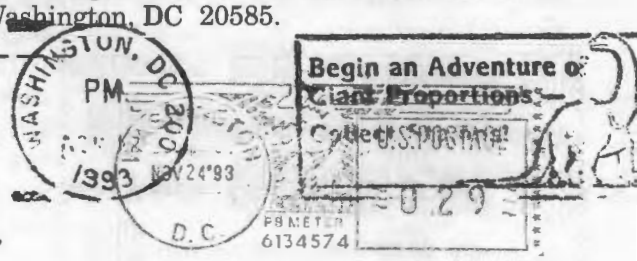

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOLUME 3 NUMBER 2 SUMMER 1993

NEW ASSISTANT SECRETARY GRUMBLY'S PRIORITIES FOR THE FUTURE

When he was sworn in as the Assistant Secretary for Environmental Restoration and Waste Management on May 27, 1993, Thomas P. Grumbly hit the ground running and has kept the pace on implementing his priorities for environmental management programs. As stated in testimony before the House Committee on Science, Space, and Technology Subcommittee on Energy, Mr. Grumbly is acting on six major priorities: health and safety, management controls, land use policy, outcomes and tangible results, technology development, and stakeholder initiatives.

Beginning with his confirmation hearings, Mr. Grumbly has repeatedly stated his commitment to address risks at DOE sites and ensure health and safety for Department employees and the public. Accordingly, the Office of Environmental Restoration and Waste Management is developing better risk assessment tools and putting together a comprehensive review team to identify the long-term exposure risks at DOE sites.

To better manage taxpayers' dollars, Mr. Grumbly is promoting initiatives to increase contractor accountability, reduce costs, and increase productivity. His goal is a program that is "in control" managerially and financially. This program would include better financial and accounting controls, enhanced cost-estimating capabilities, and independent cost estimations to better manage contractors.

Mr. Grumbly believes that land use policy is key to the environmental management cleanup mission. By determining the future use of a particular facility, the Department can effectively clean it up to a level that is suitable for its intended use.

To ensure that the environmental management program is "outcome oriented," Mr. Grumbly wants to achieve measurable progress at the sites and inform the public of the progress in a timely manner. To achieve such progress, he suggests:

- focusing technology development activities on major DOE cleanup problems;
- adopting a systems engineering approach that considers multiple functional areas, collective requirements, and minimum standards developed by a broad scope of professional expertise;

(Continued on page 2)

Prior to accepting his new position as the Assistant Secretary for Environmental Restoration and Waste Management, Mr. Grumbly was the President and Chief Executive Officer of Clean Sites, Inc. Clean Sites is a nonprofit group that facilitates cleanup of hazardous waste sites through site management, dispute resolution, and policy analysis. Previously, Mr. Grumbly directed the Health Effects Institute in Massachusetts and was a partner in the Boston consulting firm, Temple, Barker and Sloane, Inc. He also worked as Staff Director for the Subcommittee on Investigations and Oversight of the House Science and Technology Committee, which was chaired by then representative Albert Gore, Jr. (1981-1982).

Mr. Grumbly received his Bachelor of Arts in Government, cum laude, from Cornell University in 1971. He then completed his Master of Arts in Political Economy from the University of Toronto in Ontario, Canada, in 1972. He also received a Master in Public Policy from the University of California in Berkeley in 1974.

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Alaska Cleanup Planned this Summer

Due to local concerns, DOE completes the cleanup of the Project Chariot radioactive waste site at Cape Thompson in northwestern Alaska this summer.

The Project Chariot site was part of President Eisenhower's "Atoms for Peace" initiative to investigate and develop peaceful uses for nuclear explosives. In 1962, studies were conducted to test how radioactive material moved through tundra soil. At the conclusion of the 6-day experiment, contaminated soil was removed to a common location and covered with approximately 4 feet of uncontaminated soil, creating a mound. In 1992 and 1993, however, no radiation dose rates above background could be measured on top of the mound.

Despite the lack of measurable radioactivity at the site, DOE responded to the concerns of local inhabitants and has initiated removal of the mound to a licensed low-level radioactive waste disposal site in the lower 48 States. Afterward, DOE will conduct surveys to ensure that no radioactive material is left in the area. Local village and borough representatives will provide oversight along with the Alaska Department of Conservation. ★

Grumbly Visits the Waste Isolation Pilot Plant

In his first hands-on review of the Waste Isolation Pilot Plant (WIPP) project, Assistant Secretary Grumbly visited Carlsbad and Albuquerque, New Mexico, on June 22-23, 1993. During that time, Mr. Grumbly met with a variety of Carlsbad and State officials, including Mayor Bob Forrest, Governor Bruce King, and Attorney General Tom Udall; State legislators; environmental group leaders Dan Hancock and Margaret Carde; and Albuquerque Operations Office employees and contractors. Several hours were spent touring the WIPP facility.

Mr. Grumbly said that he expected the WIPP program to be "a success story." He was impressed with what has already been achieved at WIPP, noting the facility has "real potential to be a long-term solution to our [transuranic] waste storage problems." In addition, he encouraged WIPP employees and contractors to continue their focus on determining compliance with disposal standards and work toward greater and more meaningful participation with stakeholders.

Following his visit, Mr. Grumbly held a WIPP Program Review, a landmark gathering of stakeholders and program managers, on July 30, 1993, in Washington, D.C. Over 80 stakeholders were invited to participate in a candid exchange about the program's status, issues, and challenges. Mr. Grumbly committed the Department to follow-up discussions on WIPP to address related topics, such as implementation of the Federal Facility Compliance Act and the long-term management of pre-1970 buried waste. ★

UO_3 Plant Completes Mission and Prepares to Shut Down

On Saturday, June 12, 1993, the UO_3 plant at the Hanford Site in Richland, Washington, was safely restarted and began stabilizing its uranium contents. During the first day of operation at the plant, approximately 200,000 gallons of uranyl nitrate hexahydrate solution were converted to a stable uranium trioxide powder. This process reduces the volume of waste and places it in a safer form for storage. Now that the waste at the UO_3 plant has been processed, activities have shifted to prepare the plant for decontamination and decommissioning. Nitric acid, recovered during the stabilization process, is being shipped to the PUREX Plant, and contaminated rainwater is being processed to recover uranium. When processing is complete, the process systems will be cleaned.

UO_3 was built in the 1950's to recover uranium for recycling into the defense production system at Hanford. Prior to this run, the plant was shut down to upgrade safety equipment in the late 1980's and experienced a prolonged stall in operations in part due to the change in Hanford's mission. This campaign was the culmination of two years of planning and teamwork by Westinghouse and Richland Operations Office employees. ★

Pantex Plant Enhances Public Involvement Programs

DOE officials at the Pantex Plant in Amarillo, Texas, have developed and implemented extensive public participation and stakeholder involvement initiatives to enhance community awareness of the Pantex Environmental Restoration Program.

Public meetings are being held to inform the public of current site activities, respond to public concerns or questions, and solicit comments on proposed activities. The increase in community activities at Pantex can be attributed to the Pantex Community Relations Plan and the Public Information Coordination Group. The Community Relations Plan defines specific community involvement activities including issuing press releases; preparing and distributing factsheets, brochures, and other materials; and placing key program documents in public reading rooms. The Public Information Coordination Group, comprised of local residents, reviews activities at the site, reports to the public on the status of activities, and communicates the concerns of citizens to DOE.

The Pantex Plant is the Nation's site for final assembly and disassembly of nuclear weapons. ★

Improving Operational Performance

The environmental management program's Office of Operations Assessment helps operations offices and contractors develop programs to improve performance in the areas of operations, maintenance, training, and radiological control. Recently, environmental management personnel travelled to the K-25 Site at Oak Ridge and facilitated the improvement of a work control system used at the Toxic Substances Control Act Incinerator. Participants in this improvement effort praised the revised system and the approach used. More trips are planned for other DOE facilities. For more information, contact the Office of Operations Assessment at (202) 586-0383. ★

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A New Cleanup Process at Rocky Flats

A new cleanup technology, called dustless decontamination, is removing radioactivity from concrete walls and floors at DOE's Rocky Flats Plant in Golden, Colorado, in a way that is safer to workers and the environment. This "dust-busting" system removes contaminants without chemicals such as stripper solvents used by current decontamination procedures but discouraged by the Resource Conservation and Recovery Act.

Depending on the size of the surface to be cleaned, dustless decontamination uses either a piston device or a needle gun in coordination with a vacuum system. The pistons pound repeatedly to crush the upper layer of the contaminated concrete surface. Then the radioactive contaminants, concrete, and paint particles are sucked up through a hose by the vacuum system directly into a waste drum without creating any dust. The vacuum system is equipped with filters to keep particles out of the work environment. For hard-to-reach-surfaces, a hand-held needle gun attached to a vacuum and filter system is used instead of the piston.

Dustless decontamination could have widespread applications at Rocky Flats, a nuclear weapons parts plant that has several building interiors with surface radioactive contamination. In addition, this technology could prove useful throughout the energy, defense, and nuclear industries due to the need for decontamination methods that do not generate chemical waste.

After a 6-month successful demonstration, this technology, which can decontaminate up to 30-square feet per hour, is scheduled for application in several other plant facilities later this year. ★

Male sage grouse displaying mating plumage

Sage Grouse to Receive Help from UMTRA

A wildlife assistance program conducted by the Uranium Mill Tailings Remedial Action program at its site in Gunnison, Colorado, is making a big difference in preserving the quality of life for sage grouse living in the surrounding area. Found in the high sage desert areas of the western United States, sage grouse are native to this part of the country. The cocks are about the size of a small turkey, and the hens are somewhat smaller. One of the flocks in Colorado inhabits an area surrounding the disposal cell for mill tailings from the project site in Gunnison, Colorado.

During planning for the Gunnison remedial project, a site for the disposal cell was chosen based on technical criteria to ensure containment of the mill tailings. However, the site was found to be located in an area inhabited by the sage grouse. To make certain that the sage grouse range was impacted as little as possible by site operations, some very special arrangements had to be made. The first objective was to design the haul road and disposal cell to minimize disturbing the birds. When the project is completed, plans are to narrow the width of the 28-foot-wide haul road to 14 feet, thereby reducing casual use by public traffic. In addition, reclaimed areas will be seeded to replace the native plants. Other actions include the installation of 4 Wildlife Water Guzzlers and improving 7 springs and wet meadows in a 1.5-square mile area near the cell. The water guzzlers will provide water for a herd of antelope as well as the sage grouse.

Because the disposal cell is sited on Bureau of Land Management land, DOE has provided substitute land to let the grazing allotment in the area of the project lie dormant for three years following completion of the project. This will permit vegetation to return to its original condition. Finally, the Department hired contractors to conduct lek counts and brood surveys over a period of several years to determine any adverse effect that the project may have on the mating habits of the flock. Leks are clearings where the mating rituals of the sage grouse take place. The objective is not to get an actual count but to determine population trend — either up or down from the previous year.

One other important mitigation effort is that shipments to the cell will not start until mid-June, well after the sage grouse mating season is over. All of the sage grouse work has been done with the cooperation of the Colorado Division of Wildlife and the Bureau of Land Management. ★

EM SNAPSHOTS

IN THE FIELD...

Hanford: Successfully installed a test pump in the Hanford high-level waste tank 241-SY-101 in Richland, Washington. This 19,000-pound mixing pump is designed to reduce the build-up and periodic venting of potentially flammable hydrogen gasses from the 1,050,000-gallon, high-level waste tank. The purpose of this test is to determine if mixing the liquid waste at the top of the tank with the thicker sludges in the tank bottom will promote a continuous release of gasses at safe concentrations. Pump testing will continue for several months under controls based on rigorous safety criteria. Once completed, the test will help determine if this is a viable technology for reducing the hazards associated with flammable gases in this tank and possibly in other tanks.

Oak Ridge Operations Office: Recognized 8 of the 26 project teams that were nominated to receive awards for their waste minimization efforts at Oak Ridge. Through efforts of the nominated teams, DOE Oak Ridge avoided the generation of significant quantities of hazardous, low-level, and mixed waste. In addition, over $8 million in waste handling costs was avoided. Since some of these projects have been implemented at other DOE facilities, it is estimated that up to $23 million will be saved DOE-wide.

Formerly Utilized Sites Remedial Action Program: Completed an expedited remedial action at the Baker and Williams Warehouses in New York. The Baker and Williams Warehouses is a complex of three adjacent, paired, eight-story warehouses in downtown Manhattan that became contaminated from pitchblende storage during the Manhattan Project. The first pair of warehouses was remediated in 1991, the second did not require remediation, and the third pair was remediated between May and July 1993.

Nevada Operations Office: Awarded 10 grants, totalling $258,271, to 9 educational institutions including school districts, universities, and a Native American education center in California. The grants were made under DOE's Science and Technology Education Program. The program was started in 1990 to promote mathematics and science education through innovative teaching methods.

Also, selected five companies to test technologies for removing radioactive materials from Nevada Test Site soils. Each company will test their state-of-the-art systems at a "bench scale" level using controlled levels of Nevada Test Site soils. At the conclusion of the bench scale test, one or more of the most promising techniques may be selected for larger "pilot" field tests.

Weldon Spring Site: Hauled the first load of the approximately 100,000 cubic yards of contaminated material from the quarry at the Weldon Spring Site in Missouri to the chemical plant site on May 27, 1993. Removal of the quarry bulk waste was the subject of a record of decision signed in September 1990 by the Environmental Protection Agency and DOE. The project consists of excavating rubble, drummed waste, sludge, soil, and other materials contaminated with radionuclides from the quarry building and chemicals buried to a depth of 40 feet. The waste was generated by a U.S. Army Ordnance plant as well as the Atomic Energy Commission that occupied the area earlier. The quarry cleanup was mandated to protect the adjacent St. Charles County well field water supply from possible contamination.

Technology Briefs

Department and Industry Form Partnerships

The Office of Environmental Restoration and Waste Management supports cooperative agreements to enhance partnership arrangements and industry access to DOE-developed technologies. Seventeen agreements supporting environmental management research and development programs have been signed by six national laboratories. Four of these agreements involve a small business industry partner. The Cooperative Research and Development Agreements span various areas from site characterization to robotics to bioremediation. For example, bioremediation technology specified in an agreement between Oak Ridge National Laboratory and Ogden Environmental Services will be demonstrated on contaminated water at a spent uranium mine in Germany. An agreement between the Idaho National Engineering Laboratory and Rotron to develop and demonstrate a biofiltration technology for treatment of hydrocarbons in soils was selected by *Research and Development Magazine* to receive a prestigious 1993 "R&D 100" award. ★

Safe Solvents Testing Laboratory

Solvents are used extensively as cleaners, degreasers, and paint strippers in a wide array of processes. These products are often carcinogenic and toxic when exposed to the air and water. The Safe Solvents Testing Laboratory is a new spin-out business based on software/database developed at the Idaho National Engineering Laboratory under the DOE/Department of Defense Solvent Utilization Handbook program. The small minority-owned business markets its testing and database services to manufacturers claiming to produce safe solvent substitutes. The technology transfer services of the Idaho National Engineering Laboratory helped start the business. ★

Dynamic Underground Stripping

Volatile organic compounds are among the most prevalent contaminants at DOE sites. Dynamic Underground Stripping, developed at the Lawrence Livermore National Laboratory, uses steam injection for rapid cleanup of localized underground toxic chemical spills. The technology uses steam injection, vacuum extraction, direct electric heating, and tomographic geophysical imaging for the cleanup of saturated and unsaturated soil zones. This technology is 25 to 40 percent faster than baseline pump and treat technologies. Technology transfer services at Lawrence Livermore are developing a commercialization plan for licensing Dynamic Underground Stripping and other spin-off technologies for industry. Commercial applications for the technology include powerplants; chemical plants; refineries; and other fuel, chemical, or solvent storage or dispensing operations. ★

Streamlining Characterization

DOE, the Department of Agriculture, and the Commodity Credit Corporation recently cosponsored the demonstration of a process that dramatically streamlines site characterization at hazardous waste sites. The demonstration was conducted by Argonne National Laboratory.

The Expedited Site Characterization process is designed to characterize sites faster, more accurately, less intrusively, and at lower costs than traditional characterization methods. This new process integrates and uses multiple technologies to produce decision-quality data. A multidisciplinary team reviews data, visits and examines the site, and selects multiple technology options before preparing a workplan. The entire team then participates in the field program, performing several activities at the same time and jointly reviewing the results at the end of each day.

The process was demonstrated at an abandoned Department of Agriculture site in York, Nebraska, in July 1993. Participants included officials from DOE; other Federal agencies; State governments; universities; and research and development, environmental services, oil, and computer companies.

DOE's Office of Technology Development within the Office of Environmental Restoration and Waste Management has taken the initiative to promote the use of this process for many DOE site characterization activities. ★

Oak Ridge Becomes Home for Two Environmental Centers

In May 1993, the centers for Environmental Technology and Waste Management officially opened at the K-25 Site in Oak Ridge, Tennessee. Representatives from DOE and Martin Marietta Energy Systems; industry leaders; and local, State, and national officials participated in the dedication ceremony.

The centers will accelerate the development, demonstration, and commercialization of environmental restoration and waste management technologies for DOE, other Federal agencies, and the commercial sector to help solve the Nation's waste management problems. The centers will provide private firms and other partners quick and easy access to the Oak Ridge site. At the site, they can test environmental restoration and waste management ideas and demonstrate practical solutions using a controlled complex with all necessary support services including 3,000 scientific and technical experts, unique facilities, and world-class laboratories. ★

EMAC Meets to Discuss Rocky Flats Transition

The Environmental Restoration and Waste Management Advisory Committee (EMAC) held their fifth meeting in Golden, Colorado, from June 16-18, 1993. The meeting focused on Rocky Flat's public participation, other programmatic issues, and transition from production to cleanup.

Representatives from the Rocky Flats Local Impacts Initiative, Colorado Council on Rocky Flats, Colorado Environmental Protection Agency, the State of Colorado, local government, and other groups accompanied the committee on a site tour and participated in panel discussions. Discussions focused on public participation experiences at Rocky Flats, facility transition, and management issues. During an evening public comments session, discussions focused on facility transition, site-specific advisory boards, medical surveillance, monitoring current and former workers, cost management, and public involvement in cleanup decisions.

EMAC's next meeting will take place in Idaho the week of September 20, 1993. For information, call Jim Melillo, Executive Secretary of the EMAC Committee, at (202) 586-4400. ★

Comments

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

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EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOLUME 3 NUMBER 1 SPRING 1993

CLEANUP ACCELERATES AT HANFORD SITE

To accelerate cleanup of the Hanford Site in Richland, Washington, key parties managing cleanup operations identified locations throughout the site where cleanup can be completed sooner than originally expected. This "Expedited Response Action" concept results in tremendous cost savings and more quickly returns the areas targeted for expedited action to productive uses. The key parties involved in Hanford cleanup activities are DOE, the Environmental Protection Agency, and the Washington State Department of Ecology. Four years ago, these parties signed a Tri-Party Agreement to establish cleanup goals and timetables for the Hanford Site. By implementing the "Expedited Response Action" concept, selected cleanup operations are progressing ahead of the schedule outlined in the Tri-Party Agreement.

Once accelerated cleanup locations are identified, the DOE Richland Operations Office and its contractors use a "Past Practice Strategy" that allows them to reduce the amount of time required to perform the up-front research needed before cleanup work can begin. Using this strategy, DOE and the regulators are more quickly able to decide which cleanup options are to be applied at particular sites. This strategy also allows more direct focus on high-priority sites so that the worst problems can be corrected first.

Accelerated work at five cleanup locations, or sites, is planned for the coming months. The first site is known as the Pickling Acid Cribs. The cribs, two earthen filtration structures, contain depleted acids once used to clean pipes before they are installed in reactors. Since no radioactivity was detected, it is expected that only traces of metal and residues were left behind in the cribs. As a result, little may have to be done to cleanup this location and release it from Hanford's list of cleanup projects.

Another site with the potential for quick cleanup is a landfill where empty 55-gallon drums are buried. The drums, which contained sodium dichromate, were emptied, crushed, and stored in the landfill. Work is now underway to recover the drums to prevent residual chemicals from entering the ground water.

This large-scale vacuum system induces an air flow through the soil to remove waste. The air flow causes the waste to evaporate and pass through carbon filter canisters where it is contained and shipped offsite for disposal.

A third site is an area referred to as the North Slope. This site was used for anti-aircraft guns and missile emplacements designed to protect the Hanford Site during the Cold War years. Troop buildings, a vehicle maintenance facility, underground fuel and chemical storage tanks, and miscellaneous structures and landfills will have to be removed. No radioactivity is expected at the site, and after cleanup, 190 square miles of Hanford land can be taken off the cleanup list. This land could be released for public use.

A fourth abandoned site, known as "Riverland Yards," contains gravel rail beds and building foundations. The

(Continued on page 2)

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(Hanford Cleanup, continued from page 1)

site was used for railroad maintenance and decontamination. Some cleanup work has already been done here, but efforts are underway to determine how clean the soil is and what, if anything, needs to be done in the way of remediation.

The final expedited response site is the radioactive waste burial ground. This site contains radioactive waste, some of which is high-level, generated at Hanford's laboratories. Part of the waste is buried in trenches, and some is stored in concrete vault-like structures called caissons. Careful planning must be done to limit worker and environmental exposure during the removal process. This planning process will take about two years.

Other sites are being considered for expedited cleanup. One such site is the N Springs site, where strontium from nearby disposal cribs is seeping into the Columbia River. This site is a high priority for the Washington State Department of Ecology, and several options are under review to halt the seepage.

Cleanup at Hanford also includes, among other things, the safe cleanup, closure, and eventual demolition of more than 100 buildings that contain chemical or radioactive contaminants. The list includes eight productions reactors along the Columbia River, chemical separation facilities such as the Plutonium/Uranium Extraction plant, and other processing and support facilities. Cleanup and decommissioning of these facilities represent their own unique challenges and are important elements of the environmental restoration mission at Hanford. ★

Treated Water Released From the Weldon Spring Site

Over 540,000 gallons of water from the Weldon Spring Quarry, located near St. Louis, Missouri, were successfully treated and released into a pipeline that carried the water to the Missouri River. This was the first batch of water released from the quarry since cleanup activities began.

On November 19, 1992, representatives from Federal, State, and local agencies witnessed the first sampling of treated water from the Quarry Water Treatment Plant. The sampling results indicated that the water was well below the cleanup standards set in a National Pollutant Discharge Elimination System Permit issued to the site by the Missouri Department of Natural Resources.

In addition to DOE, the Environmental Protection Agency, the Missouri Department of Natural Resources, and the St. Louis and St. Charles Counties Water and Health Departments collected samples. Their independent results verified DOE results, and they agreed it was safe for discharge. Since the release of this initial batch, an additional 2.9 million gallons of water have been treated and released.

DOE is pursuing cleanup here to ensure that a well field near the quarry remains safe from contaminants. The well field provides water to approximately 60,000 area residents. The quarry itself is a 9-acre area containing 126,630 cubic yards of radiologically and chemically contaminated water. Treatment and release of water from the quarry is expected to continue through 1998. ★

Proof-Of-Process Tests Begin for Cleanup of INEL's Pit 9

The Lockheed Corporation and Waste Management Environmental Services, Inc. (WMES) began separate proof-of-process tests to demonstrate the effectiveness of their proposed remediation processes for waste stored in Pit 9 at the Idaho National Engineering Laboratory (INEL). An effective remediation process would help speed the cleanup of the complex and reduce the likelihood of Pit 9 waste migrating to the Snake River Plain Aquifer.

This test phase, which lasts one year, will be carried out at each contractor's own work location. Key aspects of the tests include showing that the steps within the process can operate as an integrated system, showing that material cleaned during the processing meets the treatment standards for returning material to the pit, and demonstrating that the final waste material can be safely stabilized for storage until final disposal.

Pit 9 is a one-acre, inactive waste disposal pit at INEL's Radioactive Waste Management Complex. Most of the radioactive and hazardous waste in the pit was received from the Rocky Flats Plant between November 1967 and June 1969. DOE, EPA, and the State of Idaho recommended physical separation, chemical extraction, and stabilization as the preferred treatment methods for Pit 9 waste. Both contractors' remediation processes must operate using those three elements.

(Continued on page 3)

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Three

EM Underscores Effective Partnerships with the Public

Public involvement is the key to achieving effective, publicly supported DOE decisions. The expansion of public involvement programs, both at Headquarters and in the field, coupled with Secretary O'Leary's advocacy of public involvement, have resulted in several recent EM initiatives designed to make the public a more viable partner in EM's decisionmaking process.

One such initiative is a new strategy, developed jointly by EM's Office of Planning and Office of Financial Management, that encourages public involvement in defining EM program priorities. As part of the strategy, EM will confer with key stakeholders at the national and local levels to obtain public input into decisions on program direction, scope, and cleanup priorities.

Public participation meetings offer the opportunity for EM to confer with key stakeholders.

Another initiative is the creation of citizens' advisory groups at five EM sites: Fernald, Ohio; Richland, Washington; Savannah River, South Carolina; Idaho National Engineering Laboratory, Idaho; and Rocky Flats, Colorado. These groups will establish a direct communication link between the public and EM and encourage early stakeholder involvement in both defining problems and developing solutions. By being more open about program challenges at each site and soliciting and responding to public input, EM hopes to instill a higher level of public confidence and support in its cleanup mission.

Another initiative is the EM Public Participation Guidance, which calls for the establishment of EM public participation planning teams at Headquarters, operations offices, and other selected sites. These teams will develop plans to coordinate and streamline the public participation programs, making them more accessible and useful to the general public.

EM hopes that its recent initiatives will encourage early, frequent, substantive public input in determining the priorities, plans, and overall direction of the environmental restoration and waste management program. Now, more than ever, EM is dedicated to making the public a valued partner in its decisionmaking process. ★

(Proof-of Process Tests, continued from page 2)

Lockheed plans to segregate Pit 9 waste into four waste streams: large items, non-soils, contaminated soils, and clean soils. Clean soils will be returned to the pit. Large items (such as reactor vessels) will be decontaminated. Non-soils (sludge, glass, metal, etc.) will go directly to a melter. Contaminated soils will be treated by chemical extraction/physical separation processes.

WMES will test components of their process to treat the waste in the pit. After the waste is segregated, a surfactant enhanced chemical extraction process will remove contaminants such as organics, heavy metals, plutonium, and americium. Finally, an evaporation process will concentrate the contaminants so they can be stabilized for storage. Clean material from these processes will be returned to the pit.

If the test phase is successfully completed by Lockheed and WMES, EG&G Idaho will evaluate the processes and select one contractor to proceed to a Limited Production Phase. This phase involves constructing a full-size remediation facility at Pit 9 and processing simulated waste, followed by a limited amount of material from the pit. If the contractor successfully completes the Limited Production Phase, they will be allowed to begin full-scale operations. ★

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Four

Treatment Facility for INEL Test Area North Injection Well to be Built This Summer

Design, construction, and operation of a treatment facility to reduce contamination in a Test Area North injection well at the Idaho National Engineering Laboratory (INEL) began in the spring of 1993. The treatment facility will extract organic compounds and strontium-90 from contaminated ground water through air stripping, ion exchange, and carbon adsorption processes. The extracted radioactive waste will be disposed of at a low-level waste facility at INEL's Radioactive Waste Management Complex. Extracted hazardous waste will be disposed at offsite EPA-approved facilities.

During the spring and summer of 1993, two monitoring wells will be drilled near the injection well and will be used to monitor the effectiveness of the extraction process. These wells may also be used as extraction wells to speed the removal of contaminated ground water. The entire cleanup operation is expected to last two years. Onsite assembly of the facility will begin in October 1993, and full-scale operation of the facility will start in January 1994.

Construction of this facility represents an interim action designed to reduce ground-water contamination risks to future users of Test Area North. At present, water used by Test Area North workers is treated to meet safe drinking water standards.

The Test Area North injection well was active from 1953 to 1972 and was used to discharge liquid waste including organic, inorganic, low-level radioactive, and sanitary waste water into the fractured basalt of the Snake River Plain Aquifer. The formal decision to begin remediation was signed by DOE, EPA, and the State of Idaho in September 1992. The interim action will be followed by a final action. The Record of Decision for the final action is scheduled for October 1994. ★

Waste Isolation Pilot Plant Update

On March 19, 1993, DOE submitted the Waste Isolation Pilot Plant (WIPP) Test Phase Plan and Waste Retrieval Plan to the Environmental Protection Agency (EPA) for approval by rule. Submission of the plans is in accordance with the terms of the WIPP Land Withdrawal Act of 1992.

The test phase plan describes scientific and technical activities that are directly relevant to a certification of long-term compliance with EPA disposal regulations. The plan consists of 100 studies, 97 of which do not involve radioactive waste.

Approximately 1,100 drum-equivalents of radioactive waste are planned for tests at WIPP. These tests will provide needed information to increase public confidence in the WIPP facility and its operational safety.

"This test phase plan represents the current DOE approach in achieving a primary objective to gather information and test models to ensure that radioactive and hazardous materials placed in the WIPP pose no threat to public health and the environment," said W. John Arthur, III, Director of the WIPP Project Integration Office.

WIPP is a research and development facility near Carlsbad, New Mexico, that is designed to demonstrate the feasibility of safe, long-term disposal of transuranic waste generated by the Nation's defense programs.

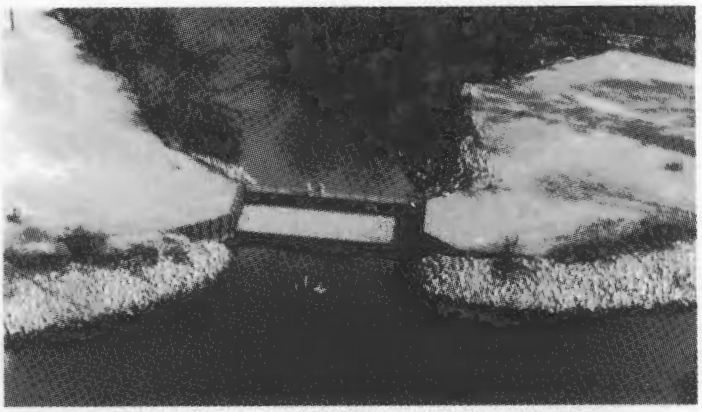
To ensure that the contingency plans are in place if EPA disapproves some or all of the waste tests, DOE is committing to an independent review of its test plans and evaluation of alternative experimental methods.

The waste retrieval plan specifies the methods for removing the waste from the underground test rooms in the event the facility is declared unacceptable.

Approval of the plans is one of several requirements that must be satisfied before DOE can bring waste to WIPP for tests. The tests will help determine if WIPP is suitable as a permanent repository for defense-generated waste.

Both plans are available to the public in DOE reading rooms throughout the country. ★

White Oak Creek Embayment Sediment-Retention Structure Wins Award



This sediment-retention structure, stretching across the White Oak Creek Embayment, helps prevent contaminated sediments from entering the Clinch River. The project won the Outstanding Engineering Achievement of the Year Award for 1992.

The Department of Energy recently won an award for the White Oak Creek Embayment sediment-retention structure located in Oak Ridge, Tennessee. The Tennessee Society of Professional Engineers, Oak Ridge Chapter, chose the structure as the 1992 Outstanding Engineering Achievement of the Year.

A project team consisting of local and nationally recognized organizations built the structure after sediment samples revealed higher-than-expected levels of radioactive and hazardous contaminants in near-surface sediments. The dam-like structure keeps contaminated sediments underwater year-round, which greatly reduces onsite risks and minimizes the erosion and downstream transport of contaminated sediments. In addition, it also keeps fish and other aquatic life from swimming in and out of the embayment.

By using innovative techniques to build the sediment-retention structure, only 400 cubic feet of waste was produced, compared to an estimated 10,000 cubic feet if traditional methods were used. This saved approximately $1 million in waste disposal or storage costs. ★

EM Cost Quality Management Assessments

Former Assistant Secretary for Environmental Restoration and Waste Management Leo Duffy established the Office of Oversight and Self-Assessment to address EM's need for independent, internal oversight of cost control. As part of its oversight mission, the office is conducting Cost Quality Management Assessments (CQMA) at EM Headquarters and operations offices. The first round CQMA was completed at the 10 operations offices in March 1992; however, the Headquarters assessment will be ongoing.

The CQMA process will help EM managers assess the quality and cost-effectiveness of programs, projects, and activities. The process takes a systems approach and uses the philosophy that effective cost management depends on successes in formulating and communicating program objectives, forecasting costs, defining and measuring the relationships between costs and progress, communicating differences in projected vs. actual costs, and recognizing the best corrective action option. CQMA teams generate reports that present and analyze assessment results, identify the root cause of problems, and make specific recommendations for EM managers.

EM developed a CQMA handbook, with assistance from the U.S. Army Corps of Engineers, academia, and professional organizations, to guide CQMA teams in conducting assessments. The handbook provides the EM protocol for cost management as defined by Federal regulations, Office of Management and Budget Circulars, DOE Orders, and good management practices. Thus, the handbook specifies precise, explicit evaluation criteria to ensure consistency among the assessments.

The operations offices have developed Action Plans describing activities being implemented in response to CQMA findings. As reflected in the Action Plans, the operations offices are making progress in cost estimating and cost management practices and are planning additional activities. Many have integrated the CQMA findings into their existing planning structure and defined actions that will improve their cost management programs.

Currently, the Headquarters CQMA team, with facilitation by the Office of Oversight and Self Assessment, is conducting program-level assessments at EM Headquarters. Concurrent with the start of the Headquarters CQMA, the Headquarters team was assembled to recognize CQMA accomplishments and emphasize the implications of an independent internal assessment of cost management practices for EM. ★

EM SNAPSHOTS

IN THE FIELD...

Idaho National Engineering Laboratory: Westinghouse resumed calcining operations on March 20 at the Idaho Chemical Processing Plant. Calcining solidifies liquid high-level radioactive waste to reduce its volume and place it in a more stable form. Calcining operations are expected to last several months and will solidify about 255,000 gallons of waste that is currently stored in underground tanks at the plant.

Chicago: DOE restarted field work associated with site characterization and several planned interim actions at Site A/Plot M located in the Palos Forest Preserve in Cook County, Illinois. Site A/Plot M was the site of the world's second and third nuclear reactors. Site A contained the reactors and labs, and Plot M contained a one-acre radioactive waste burial ground. In 1956, Site A/Plot M was decommissioned.

Formerly Utilized Sites Remedial Action Program: DOE completed decontamination and remediation of the Seymour Specialty Wire Company facility in Seymour, Connecticut. The site became contaminated when it was used by the Atomic Energy Commission for extrusion of uranium metal from 1962 to 1964. As a result of radiological surveys and reviews of pertinent records, the site was included in the Formerly Utilized Sites Remedial Action Program in 1980.

Weldon Spring Site: DOE began decontaminating and dismantling 30 structures at the Weldon Spring Chemical Plant. Decontamination consists of removing loose contaminated materials from the structures and placing the asbestos-containing materials in containers for temporary onsite storage. This project is expected to take several years to complete.

Battelle Columbus Laboratories: The Battelle Columbus Laboratories Decommissioning Project secured the services of the Scientific Ecology Group, who will reduce the volume of radioactive waste produced during decontamination and decommissioning activities. Waste will be reduced through supercompaction, incineration, and/or metal melting. These processes will leave less waste for disposal, saving between 50 and 90 percent on total disposal costs.

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Seven

Rebuilding the Transportation Infrastructure in Oak Ridge

An unused portion of railroad track that leads from the K-25 Site in Oak Ridge, Tennessee, has been repaired, and rail shipments of equipment and materials will begin to the DOE gaseous diffusion plants in Portsmouth, Ohio, and Paducah, Kentucky. The need for the railroad emerged as the focus of DOE installations shifted from production to environmental restoration and recycling stockpiles of scrap materials. A cost comparison study showed that one rail car could carry the load equivalent of three trucks, producing a savings of $4073 per rail car load.

In September 1992, after reacquiring the spur from the Southern Railroad, the Oak Ridge Operations Office began repair work. The repairs included replacing ties and rail, restoring three major trestles, and reworking nine separate grade crossings. Two used engines and spare parts were transferred from the Savannah River Site to enable transportation of heavy box cars throughout the facility. It is estimated that the total cost of this project will be recovered in seven months of rail operations (assuming that five rail cars will be moved per week).

The first shipment scheduled to leave the K-25 Site will consist of coolant, a valuable product that will be used at the gaseous diffusion plants. Also, in an effort to recycle all useable materials, there will be a large number of rail shipments of UF6 feed cylinders. ★

Implementing the Federal Facility Compliance Act

The Federal Facility Compliance Act subjects DOE to fines and penalties for violating the Resource Conservation and Recovery Act (RCRA). Prior to its enactment on October 6, 1992, DOE facilities were pursuing compliance but were not subject to fines and penalties.

The compliance act delays fines related to the prohibition on storing mixed waste (contains both radioactive and hazardous materials) that is subject to RCRA Land Disposal Restrictions (LDRs). The LDRs prohibit disposal of untreated mixed waste unless it meets established standards. To meet these standards, DOE needs to develop new treatment technologies and treatments. Recognizing this, the compliance act requires DOE to: 1) prepare and submit national inventory reports on its mixed waste and treatment capacity and technologies, and 2) develop site treatment plans for treating the mixed waste. DOE has three years before it is subject to fines (or for as long as DOE is in compliance with an order that implements the site treatment plan).

As required by the compliance act, DOE published the "National Inventory of DOE Mixed Wastes and Treatment Technologies and Capacities" on April 21, 1993. The report provides information on over 1600 mixed waste streams including: current and anticipated volumes, characteristics, available treatment technologies and capacities, waste volume subject to the LDRs, and waste minimization efforts in place. The compliance act requires a 90-day comment period for the Inventory Report, and DOE must consider any comments in a final report.

DOE Operations Offices have the lead role in working with the regulatory agencies and the public to develop site treatment plans for each site. DOE Headquarters will be closely involved to ensure that the plans are consistent with the needs, capabilities, and requirements of the DOE complex.

The National Governors' Association was chosen by the States to coordinate State concerns on treatment plan development across the DOE complex. In addition, DOE will sponsor a technical advisory group to support and work with the States as needed on treatment capacity and technology development issues. Key milestones for the development of site treatment plans are listed below.

October 1993	Each site, after discussions with States, submits a conceptual plan that will identify options for treating the mixed waste.
August 1994	Each site submits a "Draft Site Treatment Plan" to identify the preferred option for treating its mixed waste.
February 1995	Each DOE site submits the "Final Site Treatment Plan" to the appropriate State or EPA for review and approval.

DOE has taken other steps to implement the Federal Facility Compliance Act including the establishment of a Policy Coordination Group to resolve any issues and highlight any policy decisions that are required, a Legislative Implementation Plan Working Group to discuss issues and actions required at the Headquarters and site levels, and a Legislative Implementation Plan that will outline responsibilities and resource requirements. ★

Meeting With Regulators Expedites Field Work at Savannah River

Exchanges between Savannah River Site personnel and regulators resulted in the expedited approval of five Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation work plans. Approval of the work plans was needed before detailed characterization of the waste sites at Savannah River could begin. Region IV of the Environmental Protection Agency and the South Carolina Department of Health and Environmental Control approved the work plans after extensive negotiation with the Savannah River Operations Office. Site characterization field work began during May 1993 and will be completed by the end of the first quarter of fiscal year 1994. ★

Comments

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

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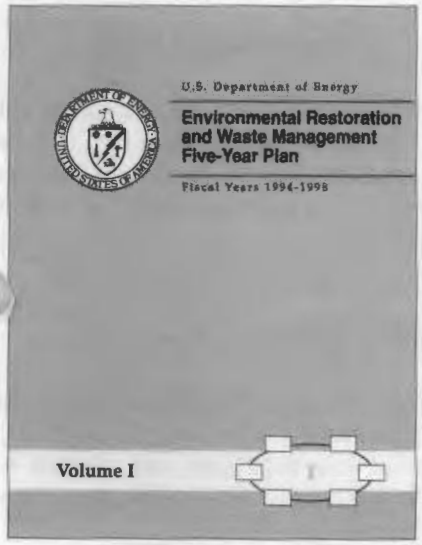
EM PROGRESS

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOLUME 2 NUMBER 3 WINTER 1993

DOE RELEASES FIVE-YEAR PLAN FOR FISCAL YEARS 1994-1998



On January 14, 1993, DOE released its preliminary *Environmental Restoration and Waste Management Five-Year Plan for Fiscal Years 1994-1998* for public comment. The plan describes new or emerging mission requirements, reports on key accomplishments and setbacks, and identifies near-term milestones and activities. In addition, it previews planning and management efforts to enhance cost effectiveness, technical proficiency, and accountability.

The Fiscal Years (FY) 1994-1998 Five-Year Plan presents broad strategic program activities and outlines the most important environmental restoration and waste management programs. The second volume contains the description of cleanup activities at 37 major DOE sites. The final plan, to be issued in late spring 1993, will contain a detailed discussion of all comments received during the public comment period.

The Department, for the first time, published a Student Edition of the Five-Year Plan. Written and designed by four Washington, D.C., area high school students, the Student Edition was created to give students, educators, and the general public a basic explanation of the contents of the more technically oriented Five-Year Plan and to spark students' interest in careers related to environmental restoration and waste management and in the environmental challenges facing DOE.

Over the past three years, the Five-Year Plan has evolved into the primary planning tool for the DOE Environmental Restoration and Waste Management Program, looking beyond the current three-year Federal budget horizon. However, this FY 1994-1998 Five-Year Plan is not exclusively focused on near-term activities; it further underscores the Department's commitment to meeting its 30-year goal for completing necessary remediation and restoration activities and other important environmental goals.

The public comment period on the preliminary Five-Year Plan extends to March 30, 1993. To receive a copy of DOE's *Environmental Restoration and Waste Management Five-Year Plan for Fiscal Years 1994-1998*, please fill out the comment form on the last page of this issue of *EM Progress* and return to: Office of Environmental Restoration and Waste Management, EM-14, U.S. Department of Energy, Washington, DC 20585.

"Through continued involvement of the States, Indian Tribes, public, interested parties, and by closely working with Congress, the Department can achieve the 30-year goal established in the very first Five-Year Plan... I am confident the capability exists within this country to meet this environmental challenge."

Leo Duffy, former EM Assistant Secretary

FORMER EM CHIEF LEO DUFFY SPEAKS OUT

Former EM Assistant Secretary Leo Duffy firmly believes that many of the best scientific and technical minds in the country can be found working at DOE sites. The thought that this "national resource, this incredible talent pool" could somehow be wasted because of DOE's changing mission is a possibility that he clearly finds unacceptable.

Having said that, however, Duffy is just as quick to concede that DOE has a long way to go to become a leader in technological innovation and economic development. He doesn't hesitate to point the finger at those who are unwilling to change the old DOE mindset, insisting instead on "business as usual."

In a wide-ranging interview with *EM Progress* on November 20, 1992, Duffy responded to questions on accomplishments, challenges, regulatory, and technological issues. But he turned most expansive discussing the country's economic position worldwide and the roles DOE and the EM program should play.

"The most important thing to look at over the next 5 to 10 years is how we are going to continue using many of the highest skilled people in the country who are working at DOE sites," he said. "As these sites transition from weapons production and other defense work, we need to develop more innovative thinking. You can't just lay off 6,800 people at the Rocky Flats Plants in Colorado," he points out, "without taking a serious look at the economic implications for the community and the state, as well as for the DOE workers."

COMMUNITY INVOLVEMENT IS THE KEY

"We have to change the mentality of the people in surrounding communities to stop bashing DOE and recognize the economics... It will take a lot of work, a lot of innovative thinking and dealing with industry. The community has to start working on maintaining the skills in those facilities. If we don't," Duffy emphasizes, "it's a loss to the community and the country. We can't remain competitive and not use our best people."

Duffy said the challenge is to become even more open with communities and other stakeholders so that they become partners with the Department in finding solutions to environmental and economic concerns.

"We must speak in terms the public understands. In the past," Duffy said, "we've been speaking to each other, relying on jargon and things of that nature. It just won't work anymore," he insists. "Information must be presented in plain English, and DOE must get the information out before the public reads about it in the newspaper."

Even then, openness and clear communication work only if there is real performance as well, he said. "We have to show the taxpayers and the Congress that DOE can do it faster, better, cheaper, than anyone else... The incentives have to be in procurement, based on better, reliable cost estimates."

PERFORMANCE PAYS

"If you do the job efficiently and effectively at the lowest cost, everybody will know about it — it's that unusual. And that's 'performance'. The only thing that can really get you credibility is performance... You just do it better than anyone else, and you can't keep it a secret... Just as we can't keep it a secret when we screw up."

WE NEED A NATIONAL PLAN

Duffy firmly believes we need a national plan to address health and environmental risk issues based on a Federal risk assessment standard that can also be accepted by the states. Right now the states have more credibility than the Federal government.

States have been working — "some very effectively" — as individual entities, he noted, but we should face this national problem together. That means coordinating research and considering economic sensitivities nationwide.

In areas where DOE sites close, Duffy said, a coordinated plan should be developed to look at the economic issues and the impacts. "The governors should be leading on that."

Duffy was also emphatic in his assertion that DOE research deal with subjects that are applicable to high-tech industries across the board. Robotics, miniaturization and thermodynamics, to name a few, are all applicable to the private sector. "We just need to apply them to more mundane operations, from development of high resolution TVs to environmental monitoring devices. We are the leaders; we just haven't applied it to the commercial area," he insists.

Duffy believes DOE can and must compete with the commercial sector. "Anticipate the markets of the future or be like Tyrannosaurus Rex - not around anymore.★

DOE Will Participate in Voluntary Pollution Prevention Program

■ *Goal Is to Reduce 17 Pollutants by Half in Three Years*

DOE has agreed to participate in an EPA-sponsored voluntary pollution prevention program, the 33/50 Program. The program's goal is to reduce pollution from 17 EPA-designated priority chemicals nationwide.

DOE's participation involves submitting Toxic Chemical Release Inventory Reports for all sites that meet the reporting thresholds established in Section 313 of the Emergency Planning and Community Right-to-Know Act. This law commits the Department to track and monitor releases of Section 313 chemicals in addition to the 17 priority chemicals identified by EPA.

DOE will seek to reduce toxic releases of the priority chemicals by 50 percent in the next three years. This goal will apply to sites currently submitting Toxic Chemical Release Inventory Reports. For sites that begin submitting the inventory reports in 1993, DOE will reduce the releases by 33 percent in four years.

Participation in the program will enable DOE to accomplish the following:

- promote prevention as a cost-effective alternative to traditional waste management methods,
- make significant reductions before legally required in cases where the 17 priority chemicals are also regulated under the Clean Air Act, and
- bring about earlier cost-saving health benefits.★

Federal Facilities Act Makes DOE Subject to Waste Laws

■ *EPA Inspections and Waste Inventories Are Required*

President Bush signed into law on October 6, 1992, the Federal Facilities Compliance Act, which makes DOE subject to fines and penalties for violations of Federal, state and local hazardous waste laws. The new law makes all Federal agencies subject to the same environmental laws as private industry.

Secretary of Energy James Watkins said, "DOE fully supports the objectives of this legislation, which are: to bring all Federal facilities into compliance with applicable Federal and state hazardous waste laws, to waive Federal sovereign immunity under those waste laws, and to allow the imposition of fines and penalties." However, DOE remains concerned, Watkins added, because treatment technology and capacity do not yet exist for much of the mixed waste DOE generates. As a result, DOE cannot comply with certain requirements.

Recognizing this, the Act delays fines and penalties for certain mixed waste violations. However, DOE must submit to the States and EPA within 6 months a national inventory of its mixed waste and of the existing facilities and technologies that can treat the waste. DOE must then develop a plan for the development of treatment capacity for each site that generates or stores mixed waste. This plan must be submitted to the state or EPA for approval; the regulator will then issue an order requiring compliance with the approval plan.★

President Bush Signs WIPP Land Withdrawal Legislation

President Bush signed the Waste Isolation Pilot Plant (WIPP) Land Withdrawal Act of 1992 into law on October 30. The Act empowers DOE to start the test phase at WIPP in as early as 10 months if certain requirements are met. The legislation places new requirements on the WIPP program and establishes oversight by the Environmental Protection Agency and other Federal agencies.

WIPP, a research and development facility constructed 2,150 feet underground in bedded salt deposits, will demonstrate the feasibility of safe, long-term disposal of transuranic waste generated by the Nation's defense programs. These wastes are now stored in Idaho, Colorado, Tennessee, Nevada, South Carolina, and Washington.

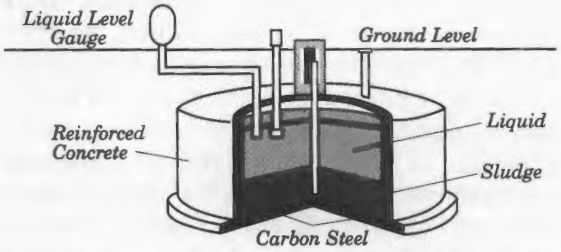
The new law permanently transfers public lands to DOE and authorizes limited shipments of defense waste to WIPP for underground testing. In doing so, it resolves, in part, a 1991 lawsuit filed by the state of New Mexico and others to stop all waste shipments to WIPP.

Still at issue is WIPP's interim status under the Resource Conservation and Recovery Act. The state of New Mexico has not officially recognized WIPP's interim status and is currently reviewing the facility's RCRA permit application. Unless the U.S. District Court revises its earlier ruling denying WIPP interim status, the test phase cannot begin until the state issues the pending permit. The projected date for that permit is summer 1993.★

Hanford Demonstrates Tank Waste Retrieval Technologies

Mixed waste has been stored in single-shell storage tanks on the Hanford Site near Richland, Washington for more than 40 years. To remove the mixed waste from the tanks for treatment and disposal, DOE is developing waste retrieval technologies. On September 24, 1992, DOE demonstrated some of these new technologies.

Sensors, waste-dislodging tools, conveyance systems, robotic manipulators, and a central control system were integrated to demonstrate retrieval operations in a simulated tank environment.



Single-Shell Storage Tank Containing Mixed Waste

The following technologies were demonstrated:

Sensor systems are used to gather information about the waste tank environment. The sensors provide information describing the location and arrangement of objects within the tank to the operations and control systems. Other sensor systems measure physical waste properties.

The soft waste dislodging tool uses mechanical blades, air jets, and water jets to dislodge soft waste. Parameters, such as flow rate, pressure, and nozzle size for the air and water jets, can be varied. The position and motion of the blades may also be adjusted.

The hard waste rubblizer uses a blast of high pressure water (40,000 psi) to break up large blocks of hard salt cake. Once the large expanses of salt cake are fragmented, a secondary process further reduces the salt cake to a size compatible with the conveyance system. The rubblizer will not damage the steel tank liners and is effective in removing salt cake encrusted around pump shafts and pipes.

The cutter is a hydraulically operated unit modified for use as a remotely operated tool. In tank, the cutter is used to cut two-inch diameter steel pipes. This cutter can be remotely operated and still maintain a high level of accuracy.

The air conveyance system uses high velocity air to convey waste once dislodged. The tank uses a 75 horsepower motor to draw air through a six-inch diameter hose; a filter separates the waste from the air stream.

The robotic manipulators maneuver the waste dislodging tools in the tank. The Spar RMS 2500 manipulator has a 28-foot horizontal reach and a payload capacity of 2500 pounds. The smaller, more dexterous manipulator is the Schilling Titan II manipulator. It has a reach of 78 inches and a payload capacity of 250 pounds.

The Graphical Intelligent System Controller safely operates numerous manipulators, tools, and sensors simultaneously. This controller allows the operator to plan retrieval tasks, to check for potential collisions, and to operate the retrieval system.

These waste retrieval technologies are being developed by the Robotics Technology Demonstration Program and the Underground Storage Tank Integrated Demonstration Program in collaboration with EM's Waste Management program. DOE laboratories, universities, Federal and local agencies, and private industries participate in these technology development programs designed to efficiently bring the best technologies to bear on the environmental restoration needs of DOE sites.★

Rocky Flats Forms Citizen Review Group

DOE has formed a Citizen Review Group to initiate public involvement activities on the *Comprehensive Treatment and Management Plan*. The plan is being developed to manage land disposal restricted waste currently in storage as well as future generated waste, and will help bring this waste into compliance with today's regulations. The plan identifies specific land disposal restricted waste at the plant that is covered in the Federal Facilities Compliance Agreement II and states how this waste will be brought into compliance.

Comprised of participants from academia, business, government, and surrounding communities, the Citizen Review Group meets regularly to review the plan and related technology development materials. The Group will provide comments to DOE and the Environmental Protection Agency, who will then consider how to incorporate their suggestions. A 60-day public comment period will then be initiated, during which a public information meeting/workshop will be conducted to fully explain land disposal restricted waste and the plan.

For schedule information concerning workshops or meetings, contact John Rampe, U.S. DOE Rocky Flats, P.O. Box 928, Golden, CO 80402-0928, (303) 966-6246.★

Dynamic Compaction Tests Produce Data for Closure of Trenches

Engineers at Savannah River are constructing models of a clay closure that will be used in a dynamic compaction test project at mixed and low level waste facilities. Testing will provide information on the effects of dynamic compaction on an adjacent clay cap.

Dynamic compaction is a process used extensively in the construction industry to compact soils beneath building foundations and bridge pilings. During this process, a 20-ton weight is dropped from approximately 42 feet to reduce any void space that might occur in the trenches, thus reducing the possibility of further settling after placing the cap.

The tests will indicate whether dynamic compaction is a feasible method for compacting buried waste during closure of the trenches — without adversely affecting the adjacent cap at an existing Mixed Waste Management Facility. That cap is located within 10 feet of the trenches.

This method was used successfully in the closure of the Mixed Waste Management Facility, a 58-acre waste site located within the Burial Ground Complex at Savannah River. But dynamic compaction on these trenches may cause microscopic cracking or movement of the existing clay cap, disrupting the integrity and, therefore, the permeability of the cap.★

EM Completes Emergency Preparedness Exercises at Fernald, INEL

On September 12, 1992, DOE and state of Ohio emergency management agencies participated in Exercise Joint Response '92 at the Fernald Environmental Management Project and DOE Headquarters. The exercise simulated the collision of a truck carrying depleted uranium waste from Fernald with another truck hauling ammonium hydroxide and a civilian vehicle, resulting in casualties and the formation of a chemical cloud. EM's Operational Emergency Management Team, composed of staff from EM and other DOE program offices, was notified and responded to the Headquarters Emergency Operations Center to manage and coordinate activities. The two-hour exercise ended with an evaluation involving all participants.

On September 16, 1992, DOE, the Waste Isolation Pilot Plant (WIPP), emergency management agencies from the State of Idaho and Bingham County, and the Shoshone-Bannock Tribes participated in Exercise TRANSAX '92. The full-scale field exercise involved a WIPP transporter with TRUPACT-II containers of simulated transuranic waste in transit from Idaho National Engineering Laboratory (INEL) to the WIPP site in New Mexico. The EM Operational Emergency Management Team again participated in the simulated accident — this time in a six-hour exercise. A lessons-learned document and two films are under development.★

Federal Agencies, States Push Innovative Cleanup Technologies

The Departments of Energy, Defense, and Interior, the Environmental Protection Agency, and the Western Governors' Association agreed on an ambitious action plan for demonstrating innovative cleanup technologies. The action plan calls for extensive public stakeholder input in developing criteria for the demonstration program to ensure acceptance of the technology from the very beginning and sets a goal of up to six large-scale demonstrations, the first being in October 1993.

DOE is the lead Federal agency for the program and in October 1992, Admiral Watkins announced the creation of a new high-level advisory committee, "DO-IT", the Federal Advisory Committee to Develop On-Site Innovative Technologies for Environmental Restoration and Waste Management. "DO-IT" will consist of governors and Cabinet officials who will coordinate the cleanup technology demonstration program and provide recommendations to the Federal and state governments. The governors will be represented initially by Governors Andrus (ID), Miller (NV), Symington (AZ), and Wilson (CA).

In support of the action plan, three Federal interagency groups worked over the past year on reports addressing workforce training and employment requirements; technology needs and emerging technologies; and regulatory and institutional barriers that impede the rapid commercialization and use of innovative cleanup technologies. The first two reports were presented at a Western Governors' Association meeting in October 1992 and the third is being developed in consultation with the states.

Funding for the program is being sought by the Departments of Energy and Defense and the Environmental Protection Agency through the Strategic Environmental Research & Development Program established by Congress to support cleanup efforts. The Western Governors' Association also strongly supports funding for the program and have adopted it as one of their top priorities.★

EM SNAPSHOTS

IN THE FIELD...

Hanford: DOE began construction of the Effluent Treatment Facility, which will treat liquid waste generated during an evaporation process that reduces the volume of waste in double-shell underground storage tanks. After treatment, waste will be pumped into one of three 670,000 gallon holding tanks and then into a state-approved disposal site. The facility will be completed in June 1994 and begin operating in October 1994.

Fernald: Real Time Radioscopy has been introduced as an efficient assessment technology. Radioscopy is a versatile, nondestructive means for examining objects through the use of X-rays. This system allows inspection of waste drums, bales, and boxes without opening them. The system uses X-rays to penetrate the container and an image sensing device to receive and convert the rays to a video image.

Idaho National Engineering Laboratory: Scientists successfully demonstrated a new process of waste freezing and remote retrieval. Freezing both soil and buried waste and then retrieving them using a remote-retrieval technology can reduce risk to workers and protect the environment from airborne and liquid contaminants during waste cleanup. The test was the first ever to use remotely operated tools to retrieve and dispose of materials frozen in a cryogenic process.

Oak Ridge: DOE reopened the Graphite Reactor, a National Historic Landmark, after completing cleanup activities on a canal located beneath the facility. Cleanup involved repairing a leak and removing contaminated sediment for storage and disposal. The canal was once used to transport irradiated fuel containers underwater from the reactor to an adjacent facility for processing.

Savannah River: DOE completed on-site review of the Savannah River Defense Waste Processing Facility in South Carolina. An operational readiness review is nearing completion for conducting the cold chemical runs, which are the first major tests in a phased startup. The waste processing facility is designed to provide on-site treatment of liquid high-level radioactive waste prior to permanent disposal. The facility is scheduled to begin operation in 1994.

HEADQUARTERS BRIEFS

Advisory Committee Reports on PEIS

The Environmental Restoration and Waste Management Advisory Committee (EMAC) met for the third time on December 9-10, 1992, to discuss its recommendations on the EM Programmatic Environmental Impact Statement (PEIS). EMAC, which was formed to advise EM chief Leo Duffy on program issues, submitted the recommendations to Duffy on December 21, 1992. The meeting, held at the Hanford Site in Richland, Washington, included briefings from DOE field office representatives on Tank Waste Remediation, Solid and Liquid Waste Management, and the relationship between Hanford's Remedial Action program and EM's PEIS. Panel discussions between committee members and community representatives of Hanford's Tri-Party Agreement and Future Sites Working Group emphasized the need for active public participation in decisions, not only at the program level, but across the program. A public comments session stressed the need for more effective communication between DOE and the public.

EMAC plans to hold its fourth meeting at Oak Ridge, Tennessee, during the week of March 15, 1993. Tentative topics to be discussed include findings of the EPA "Keystone Dialogue" advisory committee on facility environmental restoration, technology development efforts at Oak Ridge and other DOE sites, and the Programmatic Environmental Impact Statement. Future planned EMAC meetings will be held the weeks of June 14, 1993, in Rocky Flats, Colorado; September 20, 1993, in Idaho Falls, Idaho; and December 13, 1993 in St. Louis, Missouri.

DOE Identifies Manpower Needed for Cleanup of Weapons Complex

EM could need as many as 12,000 additional scientists, engineers, and technicians during the next five years, according to a report released on October 29, 1992. The report assessed the demand for 53 occupational categories needed for the cleanup mission and will be used to support DOE decisions on investment in education and employee re-training. According to the study conducted by Pacific Northwest Laboratory and the Oak Ridge Associated Universities Inc., health physics technicians, industrial hygienists, environmental scientists and engineers, chemical engineers, and hydrogeologists are expected to be in greatest demand. The study report, "Environmental Restoration and Waste Management Needs Assessment: U.S. Department of Energy Complex," PNL Report #8171, is available from the National Technical Information Service by calling (703) 487-4634.

Transportation Planning Reports Available

EM's Transportation Management Division has released two long-range planning documents. The first report, entitled *Transportation Assessment and Integration Report: A Basis for Planning DOE Transportation in the 1990's*, is the result of a comprehensive evaluation of DOE's nonweapons-related transportation needs. The second report, *U.S. Department of Energy Transportation Roadmap*, specifically describes the process necessary to implement safe, economical, efficient, and secure transportation for EM cleanup and addresses regulatory issues, resource allocation, long- and short-term goals, and contingency planning. To obtain copies of the documents, write to the Transportation and Technology Information and Communications Resource Center, EM-56.1, Trevion II Building, U.S. Department of Energy, Washington, DC 20585-0002, or call (301) 903-7280.

UNSUNG HERO AWARD CITATION

In recognition of their dedicated and valuable contributions in support of the EM Program, the following personnel have been selected as EM Unsung Heroes. Their competence and efforts on behalf of this organization have made a difference in establishing EM as a leading program in the U.S. Department of Energy.

Kathy Angleberger	Cindy Johnson
Jim Antizzo	Kathy Keating
Vicki Barden	Barbara Matusik
Patty Bubar	Maureen O'Dell
Jennifer Clay	Gina Poole
Cathy Fauble	Susan Sappington
Ray Gibson	Cheryl Seymour
Margie Greenwood	LaVerne Smith
Katie Hain	Leanne Smith
Ellen Hall	Lee Stevens
Mary Harmon	Barbara Watson
Randy Harris	Mary Wilson

READERS RESPOND TO EM PROGRESS

We received over 175 responses to the last issue of *EM Progress*. Most of the responses continue to be positive and supportive. They range from "great publication (keep it up!)" and "useful — easy to read style... good format" to "it's beneficial to non-DC industry people." One reader wrote, "I appreciate you making this readable for those of us with a 12th grade education!" Another said, "Very informative — written in plain English."

Of course there is always room for improvement. Suggestions range from using more photos to providing more site-specific information, "more items on the status and milestones achieved by particular projects."

Another suggested that we "show the whole picture." He wrote, "Why not list all projects — including those where you screwed up — you'd be more open and honest if you did?"

We encourage you to send us your comments about *EM Progress*, and we will do our best to respond to them in future issues. The comment form on the right will appear in every issue. If you are interested in submitting articles for possible publication, please send them to the same address. Thanks for reading *EM Progress*.

COMMENTS

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

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EM PROGRESS ★★★

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOLUME 2 NUMBER 2 SUMMER 1992

ROCKY FLATS BEGINS TRANSITION TO CLEANUP

■ AFTER CLEANUP, JOBS AND ECONOMIC DEVELOPMENT ARE TOP PRIORITIES

The Department of Energy (DOE) has taken the first step toward cleanup of the Rocky Flats plant in Colorado. The Department presented a formal transition plan to Congress July 31 outlining how it intends to complete phase-out of weapons production at the plant and begin environmental cleanup. The goals are to prepare the site for alternate uses by DOE and private industry, and to protect the workforce and the community from adverse effects due to the changeover.

WORKERS WILL BE OFFERED TRAINING, OTHER ASSISTANCE

DOE will assist workers at Rocky Flats by:

- matching job skills and opportunities within DOE,
- retraining for other positions within the Department,
- offering incentives for voluntary retirement to minimize the need for involuntary layoffs, and
- offering resume preparation, counseling, job search assistance, and extended health insurance benefits to workers who are displaced.

DOE is already working with State and local organizations to identify job opportunities and skills needed in the areas surrounding Rocky Flats.

"This facility offers tremendous private sector possibilities ..."

The Department is also coordinating with the Economic Development Administration to help State and local governments obtain grants for 'community impact' assistance. DOE will provide 25 percent of the money which communities may use for strategic planning, modification and new uses of facilities, expansion of community businesses, and creation of new jobs.

Continued on page 2

HIGHLIGHTS:

- **Weldon Springs Site Moves Into Cleanup Phase p2**
- **Students Write "Plain English" Five-Year Plan p3**
- **Value Engineering Cuts Costs, Improves Productivity p4**
- **DOE Issues Waste Minimization and Pollution Prevention Policy p6**
- **First Environmental Restoration Management Contractor Named at Fernald p6**

DUFFY ASKS NEW ADVISORY COMMITTEE FOR STRAIGHT TALK ON CLEANUP PROGRAM

■ CRITICISM SHOULD BE FOLLOWED BY CONSENSUS ON RECOMMENDATIONS

DOE Assistant Secretary for Environmental Restoration and Waste Management Leo Duffy recently told a newly-formed advisory committee that he is open to tough, objective criticism of the Department's cleanup program.

In return, he told the Environmental Restoration and Waste Management Advisory Committee members, he wants them to come up with options for addressing the concerns they identify during their review of the program. Duffy said he hopes they will reach a consensus on any recommendations they make. If that proves impossible, he wants a minority report identifying those areas where they could not agree on possible solutions.

The 23 committee members met for the first time August 5-6 in Washington, D.C. Members include representatives of other Federal agencies, State, local, and Tribal governments, labor organizations, environmental groups, industry, and academia. Many have challenged DOE policies

Continued on page 2

Rocky Flats (*Continued from page 1*)

"Instead of planning for decontamination and decommissioning at Rocky Flats, we're looking ahead to decontamination and economic development of the site," said Secretary James D. Watkins, speaking at the Rocky Flats Plant.

"This facility offers tremendous private sector possibilities because of its highly trained workforce and unique scientific and engineering capabilities. Through continued application of the plant's unique manufacturing capabilities and related technologies, the local communities would continue to benefit from the taxpayers' investment in this facility," he added.

New Office Named to Lead from Production to Cleanup

A new DOE office is spurring the effort toward cleanup at Rocky Flats and a number of other 'in transition' sites.

> *'The goal is to build on lessons learned from other economic development experiences..."*

In July, Secretary James Watkins designated the Office of Facility Transition to incorporate into transition planning input from stakeholders such as labor unions, citizen groups, State and local government officials, local business and economic development organizations, schools, contractors, and oversight organizations. The goal is to build on lessons learned from other economic development experiences such as the Air Force and Army programs dealing with base closures.

The Office of Facility Transition has already been involved in a number of site transition programs. Although development of the *Rocky Flats Plant Transition Plan* is the most visible to date, preliminary transition plans are also being developed for the Idaho Chemical Processing Plant and other facilities such as the Center for Energy and Environmental Research and Oak Ridge Isotope Distribution facilities.

Dr. Willis W. Bixby has been appointed Deputy Assistant Secretary of the new Office of Facility Transition. He will be responsible for developing and implementing the entire transition effort. Prior to this appointment, Dr. Bixby served as Deputy Manager at DOE's Richland Field Office in Washington State. He started his career with the Nuclear Regulatory Commission and has served in various managerial positions at DOE sites.

Weldon Spring Site Moves into Cleanup Phase

The Weldon Spring Site in St. Charles County, Missouri is in transition from planning to substantial cleanup activity. DOE is decontaminating large manufacturing buildings and dismantling them; construction of water treatment plants is nearly complete.

Starting this fall or early winter, the water treatment plants, which can handle as much as 300-400 million gallons of contaminated water, will begin operations. First on the schedule is removal of more than 100,000 cubic yards of radioactive and chemically contaminated waste. At the same time, DOE is preparing the documents that will support this decision for final waste treatment and disposal. They will be released to the public this fall.

Community Relations Activities Include Speakers, "Shadowing"

There has been a series of community activities at Weldon Springs. One of the ongoing programs, initiated two years ago, is the Partners in Education Program in which over 60 high school students worked with volunteers from the site on science fair projects. Under this program, area schools were provided with classroom speakers on a variety of subjects from "What is the WSSRAP?" to "Scientists aren't Nerds." Students also had the opportunity to "shadow" a professional working at the site to help choose a career path.

Advisory Committee (*Continued from page 1*)

in the past and have accused the Department of ignoring the public's concerns.

All Meetings Are Open to the Public

The committee plans to meet four times a year, and will focus on the Department's programmatic environmental impact statement, the document that spells out the general problem areas in the cleanup program.

More specifically, they will consider issues such as how DOE sets cleanup priorities, selects cleanup standards, and plans future uses of its sites. An important part of the committee's mission is to serve as a sounding board for the public's questions and concerns about the cleanup program.

The next meeting of the Environmental Restoration and Waste Management Advisory Committee is scheduled for September 29-30 in the Fernald, Ohio area. All meetings will be open to the public.

GUEST ARTICLE:
STUDENTS WRITE "PLAIN ENGLISH" FIVE-YEAR PLAN

By Michael Powe, the School Without Walls, Washington, D.C.

During the public comment period for the FY93-97 Five-Year Plan in September 1991, Assistant Secretary for Environmental Restoration and Waste Management Leo Duffy decided to have high school students from all DOE site areas review it for overall readability.

Duffy chose 15 public high school students from Washington, D.C. to critique the plan. Each student took a section of the document and commented on how the information was organized and aspects of the plan that could be changed to improve a lay-person's understanding of the text. Most of the students' comments focused on the common problem of too many acronyms and DOE jargon.

Due to the success of that project, Duffy expanded the project by starting similar programs at other DOE sites such as Oak Ridge, TN, Savannah River, SC, Fernald, OH, and Richland, WA.

"To actually see the sites functioning enhanced our understanding ..."

From the first group of students, Michael Powe (The School Without Walls Senior High School), Byron Grayson (Benjamin Banneker SHS), Kenan Dunson and Marvin Dair (Woodrow Wilson SHS) were selected to study a draft of the 1994-98 plan now being developed, and create a condensed, 15-20 page version to be distributed to high school students and the general public throughout the country.

The students' goals are to write a document that clearly explains the purpose of the plan and to keep the language and level of understanding geared toward target groups by using terms they are familiar with.

We started working on the plan in July as DOE interns reporting to Richard Aiken, Director of the Office of Planning, by developing a working outline with DOE's document coordinators. We each selected an area that particularly interested us such as a historical overview of the nuclear age, DOE site activities, fission process, transportation, and disposal.

FIRST, WE LISTENED TO THE EXPERTS

The first two weeks of the internship were spent gathering information from government and environmental experts who specialize in different areas DOE covered in the Five-Year Plan:

- SAIC education specialists Christine Donovan and Kristin Wilson developed a curriculum and supervised our production of the document.
- Dick Blaney, Deputy Director of EM's Waste Management Program Support Office, spoke with us about waste management.
- Michael Rossler of the Edison Electric Institute talked with us about nuclear power.
- The president of Wrightmon USA Inc., Diane Harmon, gave a presentation on the politics of science.
- Rob Muller, Deputy Director of the Office of Planning, discussed DOE's perspective on the Five-Year Plan.

These experts broadened and personalized our understanding of the material being studied.

NEXT, WE TRAVELLED TO SEE FOR OURSELVES

In late July we travelled to New Mexico to collect information from various DOE sites including WIPP, the Sandia and Los Alamos National Laboratories, and the TRUPACT-II facility. We were amazed to hear how stringent the requirements are at these sites.

At TRUPACT, for example, a driver's service is terminated if he gets even one ticket for speeding on or off the job. WIPP also has many features designed to prevent emergency situations. To actually see the sites functioning enhanced our understanding well beyond what we had learned from printed pages.

In the final weeks of our internship, we are teaming with individual mentors who will help us polish our respective sections of the Five-Year Plan. The document is scheduled for release in September along with the 'official' version. We hope you'll read it.

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Four

Value Engineering Cuts Costs, Improves Productivity

To ensure that projects are carried out in a cost-effective and productive manner, EM is committed to the practical application of value engineering through its environmental restoration and waste management activities.

What puts the "value" in value engineering? Simply defined, it is an effort to carefully study project tasks to reduce costs without compromising safety, performance, reliability, availability, and quality requirements.

Value engineering is directed toward areas where the largest benefit can be achieved by saving a significant amount of money, establishing more clearly defined management procedures, and substantially improving overall productivity.

In conducting a value engineering study, an interdisciplinary team analyzes an issue in five phases:

- The **Information Phase**, during which the team defines and analyzes the project, identifies areas of high cost and low functional worth, determines the problem areas, and selects the areas to improve;
- The **Creative Phase**, during which the team brainstorms to identify alternatives;
- The **Evaluation Phase**, during which the team evaluates and ranks the most promising alternatives;
- The **Development Phase**, in which the team quantifies system and cost impacts of the most promising alternatives; and
- The **Presentation Phase**, in which the team summarizes the effects of the most promising alternatives, makes recommendations, and begins development of an action or implementation plan.

Savings Are Substantial

EM has successfully used value engineering studies in a number of projects to save money and improve productivity. For example, in February/March 1991, a Study for Environmental Restoration was conducted at the Hanford Site with the primary objective of reducing well-drilling costs.

Savings resulted from a number of recommendations that included discontinuing the bussing of workers to well-drilling sites, reducing the number of personnel, and resolving inconsistent safety requirements at the sites.

Following this study, 39 non-hazardous/non-radioactive wells and 111 hazardous/radioactive wells were completed, resulting in approximate savings of $16,796 and $32,515 per well, respectively.

In addition, an update (abbreviated study) was conducted in March 1992. With the implementation of additional cost reduction measures, the estimated savings per well increased to $34,071 for each non-hazardous/non-radioactive well and $43,840 per well for hazardous/radioactive wells.

An additional 57 non-hazardous/non-radioactive wells and 91 hazardous/radioactive wells will be completed by the end of 1993, resulting in further savings.

"Value engineering is directed toward areas where the largest benefit can be achieved."

Another recent waste management study was conducted in March 1992 for DOE's Oak Ridge Field Office. The subject of the study was the Melton Valley Liquid Low-Level Waste Collection and Transfer (LLLW-CAT) System Upgrade to be constructed at the Oak Ridge National Laboratories in Tennessee. The estimated $41 million project will provide a new replacement LLLW-CAT system to serve facilities in the Melton Valley area.

The goal was to eliminate or modify those functions that do not contribute directly to the safe removal and transfer of LLLW from the Melton Valley Facilities. Over *$2 million in savings* are projected.

Cost Concerns Get Increased Coverage in EM Progress

EM's Cost and Schedule Estimating newsletter, CA$E-In-Point, has been incorporated into EM Progress to make the information available to a wider audience. CA$E-In-Point has been a forum for cost and schedule issues surrounding the EM program.Articles on EM cost and schedule improvement initiatives such as the one on this page on Value Engineering will be included in each issue of EM Progress. Watch for the CA$E-In-Point logo.

CA$E *IN POINT*°

EM SNAPSHOTS

IN THE FIELD...

Argonne National Laboratory-West: DOE completed removal of 36.5 cubic meters of PCB-contaminated soil and concrete from the Experimental Breeder Reactor II Transformer Yard.

Fernald: The Waste Pit Area Stormwater Runoff Control project has been completed. The purpose of this project was to collect and treat potentially contaminated stormwater runoff from waste pits that contained radioactive and hazardous waste generated by processing high-purity products for defense programs. Stormwater carried uranium from the waste pits into Paddy's Run, a small stream that borders the site where it contaminated an aquifer underlying the Fernald site and the surrounding area.

Savannah River: DOE is in final stages of preparation for the Cold Chemical Run phase of the Defense Waste Processing Facility at the Savannah River site. The facility will prepare liquid high-level radioactive waste for permanent disposal by turning it into a solid inert glass.

Idaho National Engineering Laboratory: Phase I cleanup of unexploded ordinance locations is underway. Phase I involves an in-depth search for records of bombing activities, target areas, and potential hazards to prepare plans for disposal of unexploded ordinance devices and off-site incineration of contaminated soil.

Nevada Test Site: DOE opened the Treatability Test Facility to research and develop new methods of separating plutonium and uranium from soil. The test facility will take apart samples of radiologically-contaminated soil to study contents and measure levels of contamination. Research will also include studying technologies used in other industries. The facility can mix 10 tons of soil at once, an important feature since consistent soil samples are needed when testing as many as 10 different technologies. Also in June 1992, the first shipment of low-level thorium waste was delivered to the Test Site for disposal. About 1,600 drums of thorium waste have been approved for shipment to Nevada and the characterization of the remaining material is nearly complete.

Barnwell: In July 1992, shipment of depleted uranium metal to the Defense Consolidated Facility in Barnwell County, South Carolina began. The metal is scrap from former depleted uranium metal production for the U.S. Army. Approximately six million pounds will be returned to the Army by railroad car for storage in the facility.

Oak Ridge: DOE started construction of a new General Plating Facility at its Oak Ridge Y-12 Plant. The Y-12 Plant is no longer producing weapons components, but the new facility is needed to support disassembly operations and maintain production capability. The new plating facility will be safer, more efficient and will improve waste minimization efforts. It will be housed in a new two-story building and the existing plating facility will be demolished.

DOE Selects First Environmental Restoration Management Contractor at Fernald

■ Fluor Daniel will assume responsibility under five-year pilot program

Starting September 1, Fluor Daniel Environmental Restoration Management Corp. began taking charge of cleanup operations at the Fernald site in Ohio. DOE selected Fluor Daniel as the first Environmental Restoration Management Contractor named to date in a new pilot program.

Fluor Daniel and subcontractors Jacobs Engineering Group, Inc., Haliburton NUS Environmental Corporation, and Nuclear Fuel Services will assume full responsibility for the Fernald site on December 1, 1992, following a three-month transition period that started September 1.

Fluor Daniel will perform under a five-year cost-plus-award-fee contract that may be extended up to three additional years. The total estimated cost is $2.2 billion for the five-year contract and $1.8 billion for the three-year option. The Environmental Restoration Management Contractor pilot program at Fernald is part of a new DOE contracting strategy to promote increased competition that the Department expects will produce greater efficiency and cost savings.

U.S. Firms Lead in Environmental Technology

Secretary of Energy James D. Watkins said the goal is to attract the best qualified firms to help DOE conduct its cleanup effort. "American environmental firms are the worldwide leaders in cleanup technology. We expect that through the work at Fernald and other federal facilities we will continue to be the dominant force in this field, an industry which has major export potential to other countries," he stated.

Fluor Daniel and its subcontractors will have the overall responsibility for managing environmental restoration activities to determine the nature and extent of contamination, supervise engineering design efforts in support of environmental restoration, and pursue related technology development efforts. They will also manage existing waste and waste generated from future restoration activities, continue operation of site utilities, and supervise the safe handling and processing of raw materials and products resulting from past operations at the site.

Westinghouse Environmental Management Company of Ohio operated the 1,050 acre-DOE site near Cincinnati since January 1986. In 1989, the Department suspended uranium production activities at Fernald to focus on environmental restoration and waste management work.

DOE Issues Waste Minimization And Pollution Prevention Policy

Secretary of Energy James D. Watkins issued DOE's Waste Minimization and Pollution Prevention Policy August 20 saying, "Effective waste minimization efforts can significantly reduce costs and environmental and human health risks associated with waste generation and disposal."

In May, Watkins demonstrated his commitment to the new policy when he approved the first DOE-wide Waste Minimization Crosscut Plan. A Department-wide organization and a new Executive Board have been established to coordinate waste minimization activities.

The Waste Minimization and Pollution Presentation Policy states that "It is time for a fundamental shift in emphasis in the way the Department generates and manages waste ... from pollution control to pollution prevention."

"Seed Money" offered for innovative ideas on waste reduction

To satisfy the high demand for new, better, and cheaper ways to reduce waste products and save energy, DOE will award "seed money" grants this fall through its Innovative Concepts Program.

A total of $400,000 will be awarded for proposals to eliminate or reduce waste, or find uses for gas, liquid, or solid waste streams. Proposals will be selected based on their potential to significantly impact energy use and waste generation or treatment.

The companies or individuals whose proposals are selected will receive up to $20,000 to conduct a feasibility study. The concepts will then be presented to potential investors and collaborators at a Technology Fair to be held in May 1993 in Austin, Texas.

HEADQUARTERS REPORT

• Five-Year Plan Scheduled for Fall Release

The preliminary Environmental Restoration and Waste Management Five-Year Plan for Fiscal Years 1994-1998 is scheduled for release this fall. The Plan, which is the blueprint for cleaning up DOE's waste sites and bringing facilities into compliance with environmental laws and regulations, is updated annually. This year's update will consist of three volumes. Volume I describes the EM planning process and presents the Five-Year Program Plans for waste management and corrective activities, environmental restoration, surplus facility deactivation and disposition, technology development and transportation and emergency management, and includes reference materials. Volume II includes 37 summaries and progress charts that briefly explain past, present, and future activities at each major installation. Volume III, to be issued in late 1992, will discuss comments received on Volumes I and II and their resolution. If you are interested in obtaining a copy of the Five-Year Plan or the Executive Summary, please fill out the form on page 8.

• Linda Stuntz Confirmed Deputy Secretary of Energy

On July 24, the Senate confirmed the nomination of Linda Gillespie Stuntz as Deputy Secretary of Energy. Ms. Stuntz has served as Acting Deputy Secretary since January 31, 1992. Other positions she has held include: Acting Assistant Secretary for Domestic and International Energy Policy, Deputy Under Secretary for Policy, Planning and Analysis, and Acting Assistant Secretary for Fossil Energy.

• EM Roadshow Invites Public Interest

How does a large federal organization with a guarded history and once-secret national mission share information with the public? DOE is using a portable, multipaneled exhibit to describe the cleanup mission of the Office of Environmental Waste Management (EM). The exhibit, or roadshow, is designed to inform the general public about EM's program to clean up the environment and manage waste at its sites across the nation. It includes a U.S. map display that identifies DOE cleanup site locations. Cleanup technologies are highlighted at some locations with photographs and figures. The exhibit features a headline describing the public's right to know how many of their tax dollars go to DOE's cleanup effort. The roadshow travels to DOE-related conferences and professional conferences throughout the United States.

• Research and Development Directory Available

A directory of Federal agencies and other organizations conducting research and development in environmental restoration and waste management is available from EM's Office of Technology Development. Contact: Mary Beasley, Office of Program Management, AD-21, U.S. DOE Office of Scientific and Technical Information, 175 Oak Ridge Turnpike, Oak Ridge, TN, 37831. Call (615) 576-0150, fax (615) 576-2865.

• Cooperative Program Established with University of Tennessee

DOE's Oak Ridge Field Office established a three-year cooperative program with the University of Tennessee to analyze the impacts of key EM technical decisions and issues on state, regional, national, and international policy. The university will assess human resources requirements and conduct policy studies on EM technologies and technical decisions. In addition, the university and a research staff from Martin Marietta Energy Systems, Inc., will perform technical studies on technologies currently being considered by DOE for use in future environmental restoration activities. The university will also develop new curriculum and educational programs for EM.

• Federal Facility Agreement Signed by DOE, EPA and State of California

A Federal Facilities Agreement covering environmental restoration activities at Lawrence Livermore National Laboratory's Site 300 is now in effect. Site 300 is a DOE non-nuclear high explosive testing facility located 15 miles east of Livermore, California. Solvents, high explosives, and tritium have been detected in soil and groundwater at the site. The agreement provides a framework for Federal and State agencies to monitor all Superfund investigation and cleanup activities. It also details a dispute resolution process, a schedule for completion of the investigation and initiation of cleanup activities, and penalties for missing deadlines indicated in the schedule.

House Passes WIPP Land Withdrawal Bill

The House of Representatives passed legislation July 21 that would transfer the Waste Isolation Pilot Plant to the Department of Energy. House and Senate versions differ significantly, but most parties are hopeful at this point that differences can be worked out in Conference. If that happens, a bill could be sent to the President for signature before the end of the year.

• *LEGISLATIVE UPDATE:*

WIPP Bills: H.R. 2637 was passed by the House 382-10 in late July. It would allow DOE to begin the test phase once EPA signs off on the test and retrieval plan and issues oversight regulations. EPA would also have to issue final disposal standards within six months of the bill's passage. Finally, DOE would have to receive readiness-certifications from the Department of Labor and the Mine Health and Safety Administration in addition to EPA.

Legislative Update (*Continued from page 7*)

The House bill is actually compromise legislation agreed to by three committees: Energy and Commerce, Interior and Insular Affairs, and Armed Services. It includes a floor amendment requiring DOE to study transportation routes to WIPP and to recommend those most appropriate for waste shipments. DOE must also minimize hazards to the public and the environment during shipment.

The Senate bill, passed last November, does not include EPA approval of the test plan or the other prerequisites in the House bill. It gives EPA six months to draft disposal standards and allows the agency two years to issue final standards.

Energy Bill: The House/Senate Conference on National Energy Legislation is scheduled to begin in September. The 1,000 page bill, passed 93-3 by the Senate on July 30, still includes many controversial issues.

The Senate version extends the term of the Nuclear Waste Negotiator by one year to Dec. 31, 1993, and directs the Secretary of Energy to conduct two waste-related studies, one on minimizing volume and lifetime of nuclear waste and another on new technology development.

Comments

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

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A Report From The U.S. Department Of Energy's Office Of Environmental Restoration And W...

Volume 2 Number 1 Spring 1992

Moving Dirt: Environmental Restoration In Action

The Department of Energy's (DOE) Office of Environmental Restoration and Waste Management has achieved substantial success in cleaning up a number of defense sites. Early successes have come in the Environmental Restoration (ER) component of the integrated waste management system, which is tasked with expediting actual cleanup of known contamination at inactive sites wherever and whenever possible. The details of some of these initiatives are listed below.

Removal Actions at Fernald Project Completed

DOE successfully completed the installation of bentonite clay over radium-bearing radioactive waste material in two waste silos at the Fernald Environmental Management Project (FEMP). This action will reduce the potential for radon releases to the environment from the silos and will provide protection from potential releases to the environment in the unlikely event of a silo dome collapse.

The decision to install bentonite in the two K-65 Silos was made jointly by the U.S. Environmental Protection Agency (EPA), Ohio EPA, DOE, and the Westinghouse Environmental Management Company of Ohio. The project demonstrates the effective use of new technology to help meet compliance.

Moving Dirt Continued on Page 2

Editor's Note

As you may have noticed, the title of this publication has been changed from *Environmental Progress* to *EM (Environmental Management) Progress*. The American Institute of Chemical Engineers (AICHE) publishes a periodical entitled *Environmental Progress*. To avoid infringement on AICHE's trademark title and any confusion among our readers, we sport a new name. DOE apologizes to AICHE for any misunderstanding or confusion this oversight may have caused.

A Message from Leo Duffy

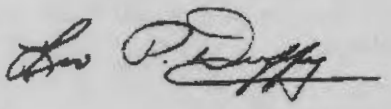
The Department of Energy's plan to clean up the environment at its defense sites is a long-term commitment. As stated previously in this publication and in our planning documents, we will need 30 years and enormous resources—both financial and human—to fulfill our commitment to the American people.

The magnitude of the task before us dictates that we must look to the future. But EM is more than Five-Year Plans and submissions that talk about progress in terms of the next century. EM is also a here-and-now program. We are working on-site today in Ohio and Tennessee, in New York and New Mexico, in South Carolina and Colorado. At some sites we have already completed cleanup; at others we have completed closures and interim cleanup until more permanent solutions are possible. You will find concrete details about our progress, and our successes, in this issue of *EM Progress*.

Equally important is our commitment to involve those who are most affected by our activities. EM has a continuing dialogue with a number of environmental and public interest groups, and I have reminded our field officers that the input of local communities is essential for all site-specific cleanup activities. We want everyone to know what we are doing, what we plan to do, and how it affects people.

It is not easy for the public to communicate with a large government agency. But the opportunity for dialogue exists. I urge concerned citizens to voice their concerns. One excellent vehicle is the comment form in this newsletter.

EM is a large program, but it need not be a monolith. Concerned citizens are our partners in this work, and we want—and need—to hear from you.



Leo P. Duffy
Assistant Secretary for Environmental Restoration and Waste Management

Moving Dirt Continued from Page 1

Through the use of a structured light source technology and a robotic retrieval device, a 3-dimensoinal map of the silo's waste surface was accurately and remotely made to use as a baseline. A robotic accurately spread the bentonite cap, eliminating the possibility of human exposure to the silo waste. After the cap was in place, the same mapping technique was used to compare the baseline configuration with the cap surface to verify that a legally-adequate cap had been applied. This technology system reduced the amount of bentonite used by 50% and thus reduced the additional waste volume by 50%. The use of these innovative technologies saved Fernald an estimated $25 million.

The actual work took about 7 days to complete after the required equipment was installed and worker safety and health measures were in place.

The $3 million project is one of several "Removal Actions" being undertaken at the FEMP under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) cleanup agreement between DOE and EPA. Removal Actions are initiated under the CERCLA program when there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances.

Second Phase of Cleanup Activities at Rocky Flats Plant Completed

DOE and its plant operating contractor, EG&G Rocky Flats Inc., have completed the second phase of the $7 million, 4-phase 881 Hillside cleanup at the Rocky Flats Plant. The 881 Hillside cleanup primarily involves removing contaminants from ground water at the site, where radioactive and chemical wastes had been disposed in the 1950s and 1960s.

This phase of the cleanup included erecting a 3,000 square foot prefabricated building to house the water treatment equipment for the restoration project and installing underground lines for water, gas, power, and sewer. Foundation pads for the 15,000-gallon tanks that will store ground water prior to its treatment were also set.

The two remaining phases of the project include installation of ultraviolet equipment to clean the water, construction of four 170,000-gallon tanks that will temporarily store the water after it is treated, and completion of an underground dam and water collection system at the base of 881 Hillside.

Mixed-Waste Underground Storage Tank Closed at the Savannah River Site

On November 6, 1991, the Environmental Restoration Department of Westinghouse Savannah River Company, with assistance from the Reactor Operations Department, completed the closure of a mixed-waste storage tank underground at the Savannah River Site (SRS).

Tank 105-C, a 32,000-liter underground storage tank located near C-Reactor, was used as a temporary holding vessel for spent solutions used for cleaning reactor heat exchangers. The tank contained mixed waste with components consisting of sludge, water, and a layer of oil. Storage of this high pH waste constituted a Resource Conservation and Recovery Act (RCRA) 90-day violation and resulted in the closure.

The waste was rendered nonhazardous by neutralization, and the oil was removed by skimming. Water and sludge were removed for storage at the F-Area Tank Farm until treatment at the Defense Waste Processing Facility becomes possible. Following a soil sampling program and the performance of a tank tightness test, Tank 105-C was filled with concrete and the ports capped. Clean soil and a final layer of asphalt were placed over the tank. Finally, about 30 cubic meters of contaminated soil were excavated and disposed of at the Solid Waste Disposal Facility. Tank 105-C was the fifth RCRA unit closure at SRS.

Initial "Expedited Response Actions" Completed at Hanford

DOE recently completed two Expedited Response Actions (ERAs), resulting in the successful accomplishment of initial environmental cleanup and restoration activities at the Hanford Federal Facility. A third ERA has entered the full-scale remediation mode. In addition to remediating some sites in a more timely manner, these activities presented an opportunity to test new remedial techniques.

In a joint effort to accelerate the physical restoration at Hanford, DOE, the Environmental Protection Agency (EPA) Region X, and the Washington State Department of Ecology agreed in October 1990 to a strategy to identify waste sites that can be addressed immediately through Expedited Response Actions. ERAs, allowable under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), are generally limited to waste sites where early remediation will decrease immediate threats to the environment or lessen the extent of the ultimate remediation effort.

Moving Dirt Continued on Page 5

EM SNAPSHOTS

IN THE FIELD...

Waste samples were removed from Tank 101-SY at the **Hanford Site** in December 1991 for physical and chemical characterization. Analysis of these samples are providing data essential for identifying the mechanisms responsible for the generation and release of gases and for developing the appropriate approach to resolve the safety issue.

The final stage of liquid high-level waste pretreatment is now underway at DOE's **West Valley Demonstration Project** in West Valley, New York and will be completed in the next two years. This is a major step in achieving West Valley's goal of solidifying radioactive material into a durable, solid glass product through a process called vitrification.

Cleanup of contamination from buildings and grounds at the Bureau of Mines' **Albany Research Center, Albany, Oregon,** has been completed. The contamination was a result of metallurgic operations performed for the Atomic Energy Commission during the periods 1954-56 and 1960-70.

Tests of an experimental solar water detoxification system removed up to 99 percent of solvents in ground water at **Lawrence Livermore National Laboratory.** This process uses ultraviolet light from the sun to break down various solvents contaminating ground water.

At the **Baker and Williams Warehouses** in New York, low concentrations of radioactive materials were removed from concrete and asphalt floors and wall surfaces. These warehouses were used by the Federal Government during World War II for short-term storage of concentrated uranium ores as part of the Manhattan Project.

The **Idaho National Engineering Laboratory** is currently sampling the interior of an acid pit at the Radioactive Waste Management Complex to determine the extent of contamination and to determine what remediation actions are needed.

The final cleanup phase at the **Elza Gate site** in Tennessee has been completed. The remaining contaminated materials were transported to the DOE Oak Ridge Reservation. During the 1940's, the Elza Gate site stored uranium ores for the Manhattan Project and after World War II, the Atomic Energy Commission used it to store electrical equipment.

HEADQUARTERS REPORT

- The 1993-1997 **FYP Comment Response Document** will be released to the public in June. The document includes public comments about the Fiscal Year 1993-1997 Five-Year Plan and EM's responses to these comments. EM received 33 letters that contained 178 comments.

- A ceremony was held in November to recognize many EM workers for their dedication and hard work. Among those honored was Susan Denny, retired Director of EM's Transportation Management Program. She received a DOE Certificate of Appreciation from Secretary of Energy James Watkins in recognition of "leadership and executive expertise in directing the Program, initiating an emergency response capability, and facilitating proactive outreach."

- The Request for Proposals (RFP) for DOE's second Environmental Restoration Management Contractor (ERMC) is now available at the Richland Field Office in Richland, Washington. The contract involves the cleanup and environmental restoration of the Hanford Site. To obtain copies of the RFP, contact Sally Sieracki at (509) 376-2955 or write to the U.S. Department of Energy DOE Richland Field Office at 825 Jadwin Avenue, P.O. Box 550, Richland, Washington, 99352.

- Secretary of Energy James D. Watkins has established the **Environmental Restoration and Waste Management Advisory Committee** (EMAC) to strengthen and enhance DOE's commitment to public participation. The EMAC will help ensure that risks to human health and the environment from the cleanup of contamination resulting from past operations, and from future waste management activities are at safe levels. The EMAC will provide EM's Assistant Secretary with information, advice, and recommendations concerning the content and public involvement process of the Programmatic Environmental Impact Statement and other EM projects. Selection of the committee members will be completed by mid-May and will be announced by the Department. ★

Guest Editorial: MAKING DOE AMERICAN INDIAN POLICY WORK IN THE OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

By Mervyn L. Tano, General Counsel of the Council of Energy Resource Tribes. Mr. Tano's views are personal and do not represent the policies of the Council, its member Tribes or the Department of Energy. If you have an editorial on EM's cleanup program and would like it considered for inclusion in the EM Progress, send it to the Office of Environmental Restoration and Waste Management.

DOE's recently promulgated American Indian Policy sets forth seven broad principles that will guide the Department's future relationships with federally-recognized Indian Tribes. The Department's action sets it apart from most of the Federal Government as the only other federal agency with a similar policy is the U.S. Environmental Protection Agency (EPA). Remarkably, the Department of the Interior, the primary agent of the federal trustee, has no Indian policy. The Policy signals DOE's understanding of the role of Indian Tribes within the federalist scheme of governance. The Policy also demonstrates DOE's sensitivity to Indian history, law, and culture and their impact on modern Tribal perspectives. But some Tribes find the Policy's lack of specificity troubling and perhaps rightfully so because although the DOE American Indian Policy outlines a framework for future DOE-tribal relationships, it does not establish clear-cut indicators by which the successful implementation of the Policy can be measured.

Among the principles established by the Policy is a commitment to consult with Tribes before taking actions that would affect them. How does the Department measure the success of its consultation with Tribes? I suggest the following three criteria.

First, consultation must be with the Tribes. This is not as obvious as it seems. Administrative convenience often prompts agencies to look to Tribal and Indian organizations for one-stop shopping for Tribal input. These organizations can facilitate communication between Tribes and DOE and provide forums for the discussion and development of Tribal policies or positions. What these organizations cannot do is to speak for Tribes on Tribal-specific issues. In these instances, DOE must consult with the Tribes.

Second, consultation must be early. How early? As early as possible. In the Office of Environmental Restoration

(continued on page 5)

(Guest Editorial continued from page 4)

and Waste Management context, this means predecisional consultation with Tribes to incorporate Tribal views in the formulation of DOE policies and programs. In many instances, the Tribe will not be a party to cooperative agreements with and between the Department, EPA, and the State regulatory agency. The Department's Policy means that the DOE must consider Tribal views before defining its positions, e.g., deciding how clean is clean and choosing specific remediation technologies. The Policy means that DOE has to carry Indian water in deliberations with federal and State regulators. Consultation has to be early enough to assure the Tribes that their concerns will help define the problem and shape the solutions. Tribes have had enough of phony consultation that takes place only to validate an agency decision.

Third and finally, consultation must be knowing. Consultation like consent is meaningless unless it is knowing and informed. This means that the DOE American Indian Policy places a responsibility upon Department managers to provide Tribes with independent sources of technical assistance and expertise when Tribal interests are concerned, e.g., the Yakima Indian Nation and Confederated Tribes of the Umatilla Indian Reservation interests in Hanford and other Tribal interests in transportation and emergency response. Tribal and Indian organizations can help by providing forums for DOE briefings and training.

The DOE American Indian Policy is a good start. The promise to consult with Tribes is also a good start. It will be up to Department managers to ensure that the execution is as good as the promise. ★

Moving Dirt Continued from Page 2

Accomplishments of the first three ERAs include:

- excavation and retrieval of 120 drums containing approximately 1500 gallons of hexone, an organic solvent, buried near Hanford's 300 Area;
- start-up of full-scale carbon tetrachloride vapor extraction remediation of the vadose zone in the 200 Area; and
- completion of excavation and removal of contaminated sediment from the bottom of two trenches in the 300 Area, thereby reducing the contaminant level that could be transported to the ground water.

Proposals are currently being developed for additional ERAs. Performance of specific ERAs requires the agreement of DOE, EPA, and the Washington State Department of Ecology. ★

International Cooperative Education Program on Environment Established with Mexico

EM established an International Cooperative Education Program on Environment with Mexico that is in support of President Bush's North American Free Trade Agreement (NAFTA). NAFTA is an agreement that is being negotiated between the United States, Mexico and Canada to reduce restrictions on trade between the countries. Reducing trade restrictions will aid the United States in developing closer ties with Mexico.

The education program consists of a graduate degree program in waste and environmental management and an environmental fellows training program for government, academia and industry leaders. Activities planned for this year include establishing ties with the appropriate Mexican institutions, developing the program, and selecting the program participants. Mexican educational authorities will select approximately 10 students to pursue graduate degrees in environmental engineering at a university in New Mexico. Their attendance will begin in January 1993 and will end with the awarding of Master of Science degrees.

The education program is part of DOE's Waste Management Education Research Consortium (WERC), which was established in New Mexico. WERC ensures that the human resources will be available to restore and provide long-term protection of the environment. WERC is currently developing an Environmental Fellows Program that will target leaders from government, academia and industry interested in becoming environmental managers. This fellows program is also planned to have an international component, particularly with Mexico.

According to Leo P. Duffy, Assistant Secretary for Environmental Restoration and Waste Management, "Establishing this cooperative environmental program that involves universities, government institutions, and industry in both countries, should allow for better coordination of border environmental protection efforts. It should also lead to more consistent implementation of environmental standards, strengthening of ties between educational institutions in both countries, and a long-term relationship in the area of technology transfer." ★

Interagency Review Group Confirms Validity of Fiscal Year 1993 Budget Request

After an intensive 3-month study, the Interagency Review Group (IAG) released a report that confirmed the validity of the Fiscal Year (FY) 1993 budget request. The 3-month study was requested by Secretary of Energy James D. Watkins to analyze the level of funding needed in FY 1993 to meet legal requirements in the cleanup of DOE facilities, to fund DOE Environment, Safety and Health Orders, and to invest a sensible amount in management and discretionary activities. Participants in the interagency review included the Department of Energy, the U.S. Environmental Protection Agency, the Justice Department, the Office of Management and Budget, the Department of Defense, and the Army Corp of Engineers.

The FY 1993 budget request, submitted to Congress on January 29, 1992, included $5.3 billion for environmental restoration and waste management activities. $3.1 billion was requested for Waste Management, which oversees the treatment, storage, and disposal of a variety of hazardous and nuclear wastes. $1.8 billion was requested for Environmental Restoration, which remediates defense sites and decontaminates and decommissions facilities associated with defense operations. $0.34 billion was requested for Technology Development, which develops innovative and cost-saving technologies. $0.05 billion was requested for Corrective Activities, which brings DOE's active and standby facilities into compliance with Federal, State and local requirements. The charts below illustrate the EM FY 1993 budget request.

While the IAG agreed that this budget request was valid, it also indicated that there were areas within the EM program that could be improved. Suggested areas of improvement include cost control, cost estimation and the allocation of overhead costs. The IAG also recommended increases in personnel, particularly at the DOE Field Offices.

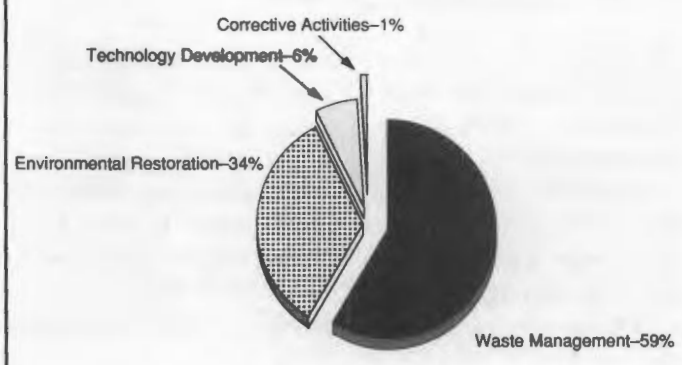
To improve areas within the EM program, Secretary of Energy James D. Watkins launched a number of initiatives. One initiative is for the DOE Chief Financial Officer to perform an in-depth study and evaluation of overhead allocations at each DOE Field Office. The study and evaluation is to be completed in July 1992.

DOE also developed a Progress Tracking System (PTS) to track program activities, accomplishments, and resources on a monthly basis. The PTS improves communication of EM program accomplishments and expenditures, provides a consistent reporting format EM-wide, and responds to internal and external requests for information in a timely and consistent manner.

Management tools for Technology Development are also being developed to ensure that better, faster, safer, and cheaper technologies are created and used. These management tools will identify the root cause of problems and the associated technological solutions. Collaborative demonstrations of technologies will be also be conducted to ensure that proven technologies are transferred to all sites.

These initiatives are representative of EM's efforts to improve the cost aspect of their program and still protect the health and safety of the public and environment. ★

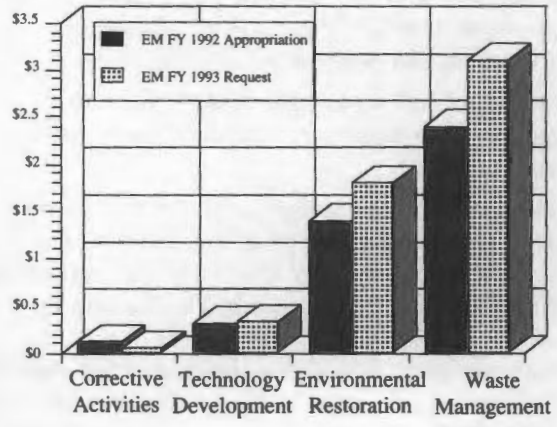
Breakdown of EM FY 1993 Budget Request



EM FY 1993 Budget Request

Comparison to EM FY 1992

(Dollars In Billions)



WIPP Test Phase Delayed

In October 1991, Secretary of Energy James Watkins announced the readiness of the Waste Isolation Pilot Plant (WIPP) to begin a multi-year Test Phase with limited amounts of Transuranic (TRU) waste. The Test Phase is necessary to determine WIPP's compliance with long-term disposal requirements of the Environmental Protection Agency. However, DOE's plans to begin the Test Phase have been delayed due to lawsuits filed by the New Mexico Attorney General, Texas, various environmental groups, and three Congressmen challenging the legality of the current administrative land withdrawal (a procedure by which the Department of the Interior sets aside Federally-owned land at the WIPP site for DOE's use), and DOE's compliance with the Resource Conservation and Recovery Act (RCRA). In immediate response to the lawsuit filed by the New Mexico Attorney General, Admiral Watkins voluntarily suspended the first shipment of waste to WIPP on October 9, 1991.

On January 31, 1992, the U.S. District Court of the District of Columbia granted New Mexico a permanent injunction enjoining DOE from beginning the Test Phase with TRU waste at WIPP. The basis of the court's ruling were alleged violations of the Federal Land Policy and Management Act (FLPMA) and RCRA. These issues are procedural in nature and in no way affect the protection of public health and safety. Appeal briefs were filed by the Department of Justice on behalf of DOE in the U.S. Court of Appeals for the District of Columbia Circuit in March and April 1992. Oral arguments will be heard in the Appellate Court on May 15, 1992.

In parallel, discussions are underway with Congress on passage of a mutually agreeable legislative land withdrawal that would permit the Test Phase with waste to proceed. In the interim, Westinghouse is maintaining a full state of readiness to accept and emplace test waste and INEL/ANLW continues to characterize waste and load bins for the WIPP test program. WIPP remains ready to begin the Test Phase upon resolution of litigation or completion of legislative land withdrawal. ★

DOE Issues Draft Implementation for Integrated Cleanup and Holds Interactive Public Meetings

On February 5, 1992, EM released the draft version of its plan to develop a Programmatic Environmental Impact Statement (PEIS) on weapons plant cleanup. The Department will use this PEIS to assess potential environmental consequences of alternatives for implementing an integrated cleanup and waste management program.

The proposed Implementation Plan (IP) represents the first major step forward in the PEIS process since Secretary of Energy James D. Watkins ordered the study in 1990. The IP records the results of public comments on the scope of the PEIS, serves as a plan for the preparation of the PEIS, and defines alternatives and issues to be evaluated in the PEIS. In the draft plan, DOE calls for the PEIS to evaluate the risks and benefits of four "broad, systematic" strategies for remediating contaminated sites, as well as various options for consolidating waste storage and treatment facilities.

The public scoping process began in late 1990 with a series of 23 "scoping" meetings conducted in cities across the Nation. The Department considered the public comments in the scope of the PEIS in the draft IP and scheduled six public interactive workshops for March and April of this year. DOE sought a broad representation of groups and individuals for these workshops, that focused on DOE EM program-wide issues relating to the IP and the PEIS. At these workshops, DOE invited comments on the IP and encouraged public participation in the overall PEIS effort.

Approximately 250 individuals participated in the review of the plan by attending one of the workshops. There were plenary, question and answer, and summary report sessions, as well as small group breakout sessions. The participants in the workshops responded favorably to the new interactive format.

Summary reports on the interactive public workshops will be available in the DOE reading rooms. ★

COMMENTS

We are interested in receiving your comments—what you like and what you don't like—about ***EM Progress.*** Your views, comments, and suggestions are appreciated.

(Use an additional page if necessary)

____ I am not on your mailing list. Please add my name.

Name: _____

Address: _____

Please return to:
Office of Environmental Restoration and Waste Management, EM-14, U.S. Department of Energy, Washington, DC 20585.

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ENVIRONMENTAL PROGRESS ★★★

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

VOL. 1 NUMBER 2 OCTOBER 1991

DOE DECLARES WIPP READY FOR TESTING

Secretary of Energy James D. Watkins has declared the Waste Isolation Pilot Plant (WIPP) ready to commence its Test Phase. The decision followed two days of consultation with the Administrator of the Environmental Protection Agency (EPA), the Chairman of the National Academy of Sciences Panel on WIPP, the Chairman of the Defense Nuclear Facilities Safety Board (DNFSB), and the Blue Ribbon Panel on WIPP (which is composed of individuals appointed by Governors of States affected by WIPP). "They have concluded that we are ready for the Test Phase and that it is important in properly assessing the safety of WIPP. The panel has confirmed that the Test Phase does not represent a risk to the public," Secretary Watkins stated.

WIPP, located near Carlsbad, New Mexico, is designed to store transuranic, or TRU, waste produced by the Federal government's nuclear defense activities. The Department plans to conduct a Test Phase over the next several years to evaluate the facility's ability to comply with environmental disposal standards. If the Test Phase is successful, WIPP will become the nation's first permanent facility for the disposal of TRU wastes.

Prior to the Secretary's decision, DOE's Office of Environmental Restoration and Waste Management (EM) completed approximately 50 prerequisites — technical, regulatory, and institutional — as identified in the Secretary's Draft Decision Plan, and summarized them in the "Report to the Secretary — WIPP Readiness to Begin the Test Phase Activities with Transuranic Waste." This work concludes over two years of intensive effort by EM's WIPP Task Force, led by Mark W. Frei, Director, Waste Management Project. As part of the readiness determination, EM conducted an Operational Readiness Review (ORR) to assure the safe and environmentally sound operation of the WIPP facility. The ORR responded to a DNFSB

WIPP Continued on Page 2

FIVE-YEAR PLAN FOR 1993-1997 NOW AVAILABLE

Applauding the "time and effort of so many individuals and groups," Secretary of Energy James D. Watkins released the Environmental Restoration and Waste Management (EM) Five-Year Plan for Fiscal Years 1993-1997. The plan, which is the third such issued by the Department, marks the first time that all of the operating components of the Office of Environmental Restoration and Waste Management, both at Headquarters and the field, have participated in the development process.

Reiterating a commitment to environmental compliance and citing specific clean-up activities, this edition of the Five-Year Plan introduces five new features which include the use of the state-of-the-art planning and decision-making methodology called "roadmapping" and a broadened public involvement program.

The plan contains three sections and an executive summary.

- **Section 1** contains the purpose and scope of the plan, EM's strategic plan, and the EM planning process.
- **Section 2** contains the goals, objectives, accomplishments, and status for each of the five EM program components: Corrective Activities, Waste Management, Environmental Restoration, Technology Development and Transportation.
- **Section 3** contains specific information about all the EM sites organized by field office, the various technologies being developed and used at the sites, and transportation activities.

Copies of the complete plan, which includes the Executive Summary, or the Executive Summary as an independent document, are available to the public. Copies may be requested by calling (301)-353-3555. ★

Technology Development Activities Highlighted. See Insert.

WIPP Continued from Page 1

recommendation that DOE conduct a comprehensive, independent review prior to initiating the Test Phase.

EM Director Leo Duffy charged the ORR Team with determining WIPP's readiness. Led by Thomas C. Elsasser, Technical Assistant to the Director, the review team evaluated plans for shipping waste from the Idaho National Engineering Laboratory and the WIPP transportation system. "To carry out our mission, we developed our objectives using the experience of the team experts, the results of previous reviews, the concerns of both external and internal oversight organizations, and my own observations," Elsasser said.

The ORR identified 38 findings that required resolution prior to the beginning of the test phase. According to Elsasser, "When DOE met with the DNFSB on September 26, all 38 findings had been resolved."

The only remaining step before the Test Phase can begin is the transfer of the land where WIPP is located from the Department of the Interior (DOI) to the Department of Energy. DOE has requested that DOI issue a Notice to Proceed, which would provide DOE with administrative authority to bring TRU waste to WIPP for the Test Phase. All parties involved, however, would prefer Congress to withdraw the land. "I really believe that a legislative withdrawal is in the best interests of everyone, and I will continue to see that legislative withdrawal goes forward, but not at the cost of running WIPP in an unsound manner," Secretary Watkins stressed. ★

Office Of Technology Development, USGS Sign Research Agreement

EM's Office of Technology Development and the U.S. Geological Survey (USGS) recently signed a Memorandum of Understanding to enhance their cooperative efforts in research, development, and demonstration related to the management and cleanup of hazardous and mixed wastes at DOE installations.

Associate Director for Technology Development Clyde W. Frank sees this agreement as an important one. "Partnerships such as this will help accelerate development of environmental restoration and waste management technologies that will benefit not only DOE, but also other federal agencies and industry."

Both agencies hope to use this agreement to expand existing programs, develop cooperative projects, and share information. Efforts may include research in site characterization and assessment, studies of contaminant transport, evaluations of treatment methodologies, laboratory and pilot-scale research, and field studies and demonstrations.

As the nation's largest earth science, water science, and civilian mapping agency, the USGS conducts wide-ranging environmental research and data gathering in cooperation with more than 1,000 Federal and State agencies. "We are already involved in research and related efforts at a number of DOE sites across the country." USGS Director Dallas Peck noted. "This formal agreement should enable us to expand our earth science efforts to help solve some environmental concerns of mutual interest." ★

Headquarters Report...

- EM is developing a computerized tracking system for actions related to the National Environmental Policy Act (NEPA) to better respond to field office requests for NEPA-related actions. The new system will strengthen accountability and reduce the delay in deciding NEPA issues.

- DOE's Basic Science Advisory Committee (BSAC) has recommended that DOE devote more attention to basic research in developing technologies for environmental restoration and waste management. Members of the 18-member panel believe that from 1 to 5 percent of EM's budget should be spent on basic research.

- At the Seventh Annual Low-Level Radioactive Waste Decisionmakers' Forum, EM Director Leo Duffy called on industry, the States and the Federal Government to work together to develop solutions to the problem of radioactive waste management. While noting that only DOE can handle most of the current problems, he nonetheless chided industry for "looking for the technical tooth fairy, rather than working with DOE to find solutions." Duffy also called for increased education to combat the "radiophobia" which accompanies any discussion about radioactive waste.

- EM is conducting interviews with external parties to develop a Waste Operations Resource Allocation Priority System. In interviews held in Denver, the Colorado Department of Health; Environmental Defense Fund; Sierra Club; United Steel Workers of America; Oil, Chemical and Atomic Workers' Union; Western Governors' Association; and Western Interstate Energy Board supported the need for a resource allocation system and recommended that DOE consider such factors as "perceived" risk, recycling, technology transfer, and systems that would benefit more than one installation. Additional meetings are planned with external parties at other locations. EM is preparing a **Federal Register** notice to announce its plans to develop a Waste Operations Resource Allocation Priority System and to request public comments. ★

A Report From The U.S. Department Of Energy's Office Of Environmental Restoration and Waste Management

October 1991

Faster, Better, Safer, Cheaper: EM's Technology Development Program

The effectiveness of EM's cleanup efforts is often limited by technology. There is a pressing need for new and improved technologies for characterizing, treating, storing and disposing of wastes. Without technological advances, DOE will be unable to comply with Federal, State and local regulations and will be unable to meet its own goal of cleanup within 30 years.

EM's Technology Development (TD) Program seeks to resolve major technical issues by applying existing technologies and by developing new technologies. The goal is to develop technologies that are "faster, better, safer, and cheaper."

Associate Director for Technology Development Clyde Frank believes that these projects "have already paid for themselves in cost savings." For example, the development of reusable stainless-steel high-efficiency particulate air (HEPA) filters offers the potential to save $98 million annually when used in place of current HEPA filtration systems. ★

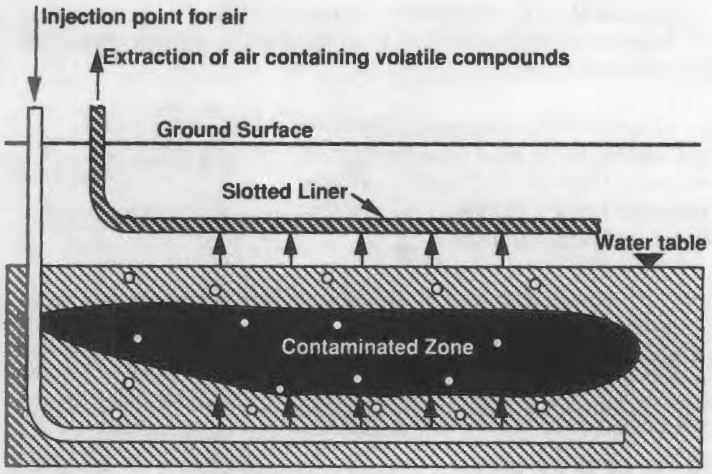
Soil, Ground Water Improved At Savannah River

Innovative environmental technologies developed through EM's Technology Development program are being tested for the cleanup of contaminated soil and groundwater at DOE's Savannah River Site. DOE scientists have developed an in-situ air stripping process that offers the potential to reduce subsurface cleanup costs by two-thirds.

The new technology removes volatile contaminants from the ground water by injecting air through a horizontal well located below the contaminated aquifer and extracting the contaminants from a second horizontal well located above the water table. Initial tests indicate that this process results in substantial reduction in ground water contamination. A principal advantage of horizontal well technology is that, unlike conventional remediation methods, it works in contaminated areas under surface structures, allowing cleanup without demolishing buildings.

The experiments at Savannah River are part of DOE's first Integrated Demonstration, whose purpose is to bring scientists from various DOE laboratories and other federal agencies to work together at one site to demonstrate and evaluate new environmental restoration technologies.

The next phase of the Integrated Demonstration is to use the horizontal wells in bioremediation experiments. Laboratory tests have shown that microorganisms naturally present in soils can be stimulated to degrade certain chlorinated solvents. In addition, effluent treatment systems, fiber-optic sensors, and innovative sampling devices will be tested.



In-Situ Air Stripping Process

The success of the early phases of the Savannah River Integrated Demonstration has resulted in interest from the National Aeronautics and Space Administration (NASA) and the Environmental Protection Agency (EPA) in using horizontal well technology at NASA sites. Within EM, this technology may also be used in the treatment of soil contaminated with plutonium and uranium, arid soils contaminated with organics, and buried waste sites. ★

A Glimpse Of The Future: Robots Tested At INEL

The future took center stage at the Idaho National Engineering Laboratory (INEL) as engineers demonstrated robots and remote systems that may be used in waste cleanup. Representatives from the State of Idaho, industry, universities, and federal agencies saw three high-tech projects for handling buried waste.

Presented by the INEL Buried Waste Integrated Demonstration Program as well as an integrated DOE development team of scientists and engineers from a number of national laboratories, the demonstration

featured a manipulator arm that can remotely operate a plasma torch to cut material unearthed during buried waste retrieval. Cutting of material is often necessary to reduce size prior to treatment.

The U.S. Army has developed a remote-controlled, diesel-powered, eight-wheel vehicle that can serve as a platform for a number of instruments: ground-penetrating radar to map objects below the surface, devices to detect magnetic and conductive materials, a radiation detector, and an organic vapor detector to identify emissions of organic contaminants. The RETRVIR (Remote Telerobotic Vehicle for Intelligent Retrieval), a vehicle developed at Sandia National Laboratories for remote retrieval of buried waste, is a Honda all-terrain vehicle that has been modified for remote operations and equipped with a high-strength manipulator arm.

These technologies will be used to characterize and handle buried waste at INEL's Radioactive Waste Management Complex, as well as at other DOE facilities. ★

21st Century Workforce Needs Addressed Through Education

Although technological developments will play a critical role in the success of the Environmental Restoration and Waste Management Program, the ultimate key to success lies with people. In order to fulfill its mission, EM will require increasing numbers of trained scientists, engineers, and technicians. Given the decline in the number of students pursuing scientific and technical careers in recent years, ensuring a trained workforce is a critical challenge to EM.

EM's Office of Technology Development is working to ensure that there are sufficient numbers of trained personnel to complete EM's long-term mission. In addition to participating in DOE-wide educational efforts, EM is pursuing its own educational programs at the university and precollege level. The EM Scholarship Program supports undergraduate students in the study of subjects related to the program. In addition, academic partnerships have been established with universities in New Mexico and South Carolina. TD is also working with Historically Black Colleges and Universities and Minority Institutions.

EM's Technology Development program has also developed two-year college training programs, precollege environmental education programs, and programs to educate the general public.

Education is the key to ensuring the future availability of trained scientists and technicians. EM plans to expand its educational efforts, with a particular emphasis on attracting women and minorities, who constitute the largest talent pool for scientific and technical personnel in the 21st century. ★

Opportunities For Industry

EM has established its own Small Business Innovative Research program for innovative approaches to environmental restoration and waste management. For more information, please contact Claire Sink at (301) 353-7926.

EM also has announced the availability of a Program Research and Development Announcement (PRDA) entitled "Research and Development for Environmental Restoration and Waste Management Technologies." For information on how to receive a copy of the solicitation, please contact Thomas L. Martin at (304) 291-4087.

These programs with industry will expedite the development of innovative technologies to support EM cleanup and waste management programs. ★

Science Of Sports Explored In Unique Summer Camp

On a playing field, a teenager is measuring his stride length; in a nearby lab, another youth is calculating the relationship between heart rate and workload. Though they may not realize it, both are learning about science.

These and other students are participating in the Sports Science Program, developed by South Carolina State College's Ken Moseley, with assistance from engineer Mike Hodges of DOE's Savannah River Research Center. The goal of this program is to spark the interest of educationally disadvantaged teenagers in science. "It gives kids a fun introduction to science through sports," says Hodges, "and will, we hope, increase their interest in entering a science or engineering field."

During the camp, students explore the natural and physical sciences, as well as sports science, through everyday events, such as determining their degree of exertion and how it affects performance, and calculating the leverage factor in performing a pull-up.

The pilot program was held last summer at South Carolina State College. The National Collegiate Athletics Association (NCAA) liked the idea and is now conducting similar programs nationwide. The U.S. Department of Agriculture and the NCAA are assisting DOE in funding these camps. ★

EM SNAPSHOTS

IN THE FIELD...

The Department of Energy held a series of public meetings to gain public input on two cleanup projects at Idaho National Engineering Laboratory. These meetings enabled citizens to comment on the impact of cleanup methods and the issues DOE should address while studying them. Comments will be used to guide DOE's approach to the perched water investigation and the warm waste pond plan. Both areas are contaminated with radioactive and hazardous materials.

A draft request for proposals (RFP) has been issued to seek public and industry comment on DOE plans to acquire an Environmental Restoration Management Contractor for the Fernald Environmental Management Project. Comments are being incorporated into the final RFP to be issued this month.

Representatives of the Yakima Indian Nation met with EM Headquarters and field managers to express tribal concerns relating to the operation and cleanup of the Hanford Site. Recognizing the unique rights of Native American governments, both parties stressed the need for open dialogue at Hanford.

DOE's Nevada Field Office began comprehensive ground-water characterization of the Nevada Test Site with the drilling of the first water well in July. The 8-year project will involve the drilling of 98 wells to provide a picture of the geology, hydrology, groundwater flow, and extent of contamination, if any, at the site.

The South Carolina Department of Health and Environmental Control has certified the closure of three waste basins at the Savannah River Site, an action that EM Director Leo Duffy called "a significant achievement in Savannah River's environmental restoration program." The three basins were used for waste storage and disposal beginning in the 1950s, a standard industry practice at the time. During the 1980s, more environmentally responsible methods for waste treatment were employed, and the use of the basins was discontinued. Remediation and restoration efforts such as waste solidification, and sealing and capping have effectively isolated the contamination at all three sites.

DOE and its operating contractor for the Waste Isolation Pilot Plant (WIPP) project, Westinghouse Waste Isolation Division, have achieved 2,000,000 safe work-hours without a lost time accident.

Readers Respond To First Issue Of Environmental Progress

The fact that nearly 200 readers have commented on the first issue of **Environmental Progress** has surprised and pleased us. We have received a wide range of views, suggestions, criticisms, and, mostly, praise.

Most of the comments were supportive of the concept of a newsletter and found the first issue informative. One reader wrote, "The open informative manner of EM Management is appreciated." Another said, "This is pro-active." Other comments were more critical: "Provide a column for independent views. Otherwise, this newsletter will only be unreliable P.R. like the first issue." We encourage the submission of articles from independent voices.

Readers were in less agreement concerning the newsletter's approach. One reader said, "I found the report informative and to the point." Another reader was equally "to the point" when she commented, "Put more meat in." Readers also suggested topics for future articles: groundwater cleanup, uranium mining and milling, and expanded budget coverage. One reader said simply, "Good Luck!"

We are interested in receiving your comments—what you like and what you don't like—about **Environmental Progress**. The comment form on the right will appear with every issue. We encourage you to use it! ★

Comment Form

☐ Please send me one copy of the Executive Summary to the Five-Year Plan.

☐ Yes, I would like to continue receiving Environmental Progress.

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ENVIRONMENTAL PROGRESS ★★★

A REPORT FROM THE U.S. DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

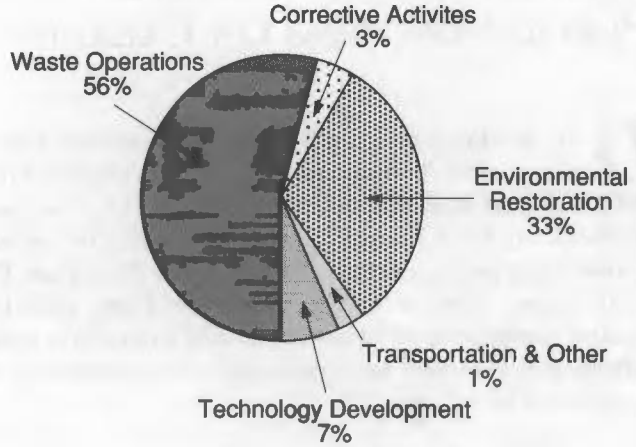
VOL. 1 NUMBER 1 JULY 1991

EM BUDGET INCREASE REFLECTS DOE's CONCERN FOR--AND COMMITMENT TO--ENVIRONMENTAL QUALITY

The fiscal year 1992 budget request for the Department of Energy's Environmental Restoration and Waste Management (EM) program is $4.2 billion, a 42% increase over the previous fiscal year. This large increase reflects the ongoing maturation of the EM program: during the past year, the program has assumed responsibility for additional cleanup sites, accomplished corrective actions on a number of near-term sites, and made considerable progress in developing long-term solutions for cleaning up the environment and managing existing and future wastes. The FY 1992 budget request seeks to continue the program's momentum.

The EM budget request focuses on five major program elements, each of which plays a critical role in the goal of the program. The accompanying graph shows the relative percentages of each. (continued on page 2)

Breakdown of EM FY 1992 Budget Request



MESSAGE FROM THE DIRECTOR:

This marks the first issue of **Environmental Progress,** a report from the Department of Energy's Office of Environmental Restoration and Waste Management. In the coming years, this program will face enormous challenges. We are committed to sharing information, not only about our successes in meeting challenges but also about the problems we encounter. It is our intention that the program will be best served by keeping the public informed, aware and active. The comment card on page 4 provides you with an opportunity to let us know what you think, both pro and con.

In coming issues, we will focus on the five major program elements: Waste Operations, Corrective Activities, Environmental Restoration, Technology Development and Transportation Management. The budget report on this page summarizes these activities, each of which plays a key role in the overall success of the program. The Five-Year Plan, discussed on page 2, lays out a framework for achieving our goal.

Our goal is environmental excellence. We will not accept anything less.

As you read this initial issue of **Environmental Progress,** you will see that we already have made substantial progress in cleaning up DOE sites. But it is equally clear that we have a long way to go. It is my firm belief that the open sharing of information--in this publication and in others--can only help our efforts.

Leo P. Duffy, Director

Five-Year Plan provides road map for future activities. Page 2

(continued from page 1)

Waste Operations activities comprise the largest portion of the budget request: $2.5 billion. This reflects the costs of constructing and operating waste management facilities, such as the Waste Isolation Pilot Plant (WIPP) in New Mexico.

Corrective Activities focus on near-term projects, reflecting the need for prompt action to bring operational facilities into compliance with existing environmental requirements. Requested funding of $140 million is below last year's level, reflecting EM's success in cleaning up those high-priority sites demanding immediate corrective action.

The growth in **Environmental Restoration** funding to $1.5 billion reflects the continuing transition from preliminary investigations and feasibility studies to actual cleanup projects. Because the ultimate scope and complexity of the restoration projects have yet to be determined, this program element has the greatest degree of cost uncertainty.

Environmental Restoration and Waste Management
FY 92 Funding Summary
(dollars in millions)

	FY 1991 Appropriation	FY 1992 Request	Percent Change
Waste Operations	1,766.9	2,545.0	+44
Corrective Activities	168.8	140.0	-17
Environmental Restoration	976.0	1,500.5	+54
Technology Development	206.0	339.4	+65
Transportation Management	0	18.9	-
Other	109.2	24.7	-77
Total	3,226.9	4,568.5	+42

Technology Development, the R&D arm of the program, is tasked with developing the next generation of environmental cleanup and waste management technology. The focus is on technologies that are safer, cheaper, and faster. The FY 1992 budget request for this program element is $339 million.

Transportation Management is responsible for assuring the safe, secure, and economical transportation of hazardous materials and waste. The funding request for this program element is $19 million. ★

Five-Year Plan Charts EM Course

The third Environmental Restoration and Waste Management Five-Year Plan, covering FY 1993 to 1997, will be published in early July. The Five-Year Plan sets forth goals and objectives for EM activities at DOE sites. It is a plan for the management of personnel, facilities, and fiscal resources; a report on progress toward achieving goals; and a vehicle for communicating DOE strategy to interested parties.

The Five-Year Plan contains specific activities that DOE will undertake to comply with environmental laws and to clean up and restore nuclear sites contaminated over the past 40 years, as well as manage its present waste stream and develop new technologies. It presents a consolidated management approach for waste-related compliance and cleanup.

As a part of the DOE commitment to open communications, EM is involving Indian Tribes, State and local governments, public interest groups, education organizations, labor unions, and other Federal agencies in its planning process. The draft Five-Year Plan has been reviewed by members of the State and Tribal Government Working Group (STGWG), the Stakeholders' Forum, and other groups. STGWG is made up of members selected by governors and Indian Tribal leaders and other government organizations. The Stakeholders' Forum consists of a broad segment of potentially affected parties.

To obtain further information on the Five-Year Plan, please fill out and return the comment card on page 4. ★

Stakeholders, STGWG Voice Public Concerns On Cleanup

During May, both the Stakeholders' Forum and the State and Tribal Government Working Group (STGWG) met in Washington, D.C. to provide uncensored feedback on EM's planning process. Topics centered on maximizing public participation in EM's Five-Year Plan. Rich Aiken, director of the Five-Year Plan, called the groups' continuing involvement in EM's planning process "absolutely essential to developing a comprehensive and responsive plan." ★

EM SNAPSHOTS

Question: What do a facility that removes solvents from the soil in South Carolina, a groundwater treatment project in Missouri, and a specially-designed incinerator in Tennessee have in common? **Answer:** They are all part of the Office of Environmental Restoration and Waste Management's commitment to environmental quality, and all have achieved significant success in the past year. Following are examples of progress made in the EM program.

Waste Operations

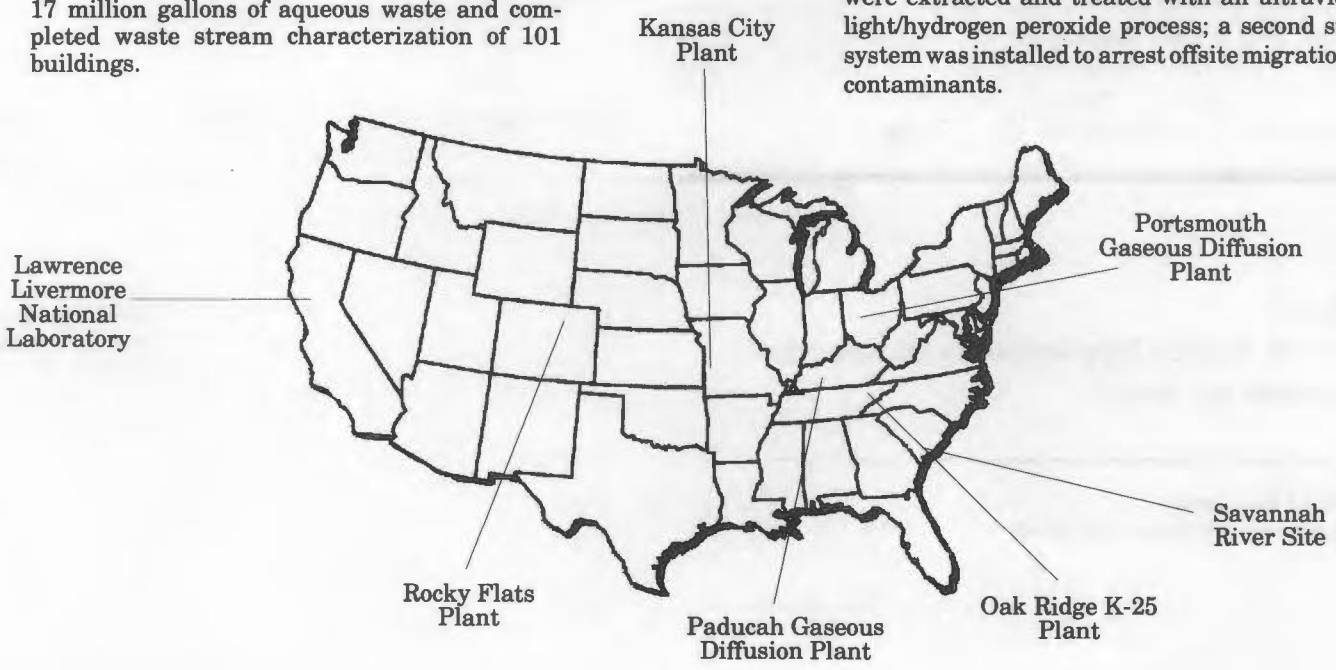
At the K-25 site in Oak Ridge, Tennessee, an incinerator has been developed that thermally destroys mixed hazardous wastes from DOE facilities, a critical step for bringing DOE sites into compliance with storage and treatment regulations.

The Rocky Flats Plant in Colorado processed over 17 million gallons of aqueous waste and completed waste stream characterization of 101 buildings.

Environmental Restoration

For the Uranium Mill Tailings Project, remediation has been completed at more than 4,000 of approximately 5,100 properties contaminated with radiation from uranium mill tailings.

At Lawrence Livermore National Laboratory in California, 16 million gallons of ground water were extracted and treated with an ultraviolet light/hydrogen peroxide process; a second such system was installed to arrest offsite migration of contaminants.



Corrective Activities

At the Paducah (Kentucky) Gaseous Diffusion Plant, scientists began design for a project that provides process water and runoff water collection systems to intercept waste streams before they enter storm drains or pen ditches.

At the Portsmouth (Ohio) Gaseous Diffusion Plant, engineers have begun installation of preliminary collection systems to contain leaks from ventilation duct gaskets.

Technology Development

The Kansas City (Missouri) Plant successfully demonstrated, tested and evaluated Ultraviolet Light/Ozone Groundwater Treatment Technology for use in the environmental restoration program.

In South Carolina, researchers at the Savannah River integrated demonstration program have developed a process that uses horizontal wells to remove volatile chlorinated solvents from subsurface soils.

EM's Whitfield Wins Environmental Engineering Award

The Conference of Federal Environmental Engineers has selected EM's Roger P. Whitfield as its Federal Environmental Engineer of the Year for 1990. In making its selection from nominees submitted by 12 Federal agencies, CFEE praised Whitfield for "the application of modern management techniques to the process of environmental restoration, resulting in major procedural improvements, increased efficiencies, and reduced costs." CFEE also noted that, "Through a variety of written guidance documents, on-site inspections, regional site-specific meetings, and daily oversight and direction, Mr. Whitfield has been able to oversee the national environmental restoration effort in a manner that is both clear and effective."

Whitfield was responsible for producing DOE's fiscal year 1992-1996 Five-Year Plan for Environmental Restoration and Waste Management. As the Director of the Office of Environmental Restoration within EM, he currently manages the Department's efforts to clean up contaminated sites throughout the U.S. ★

Comment Form

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