



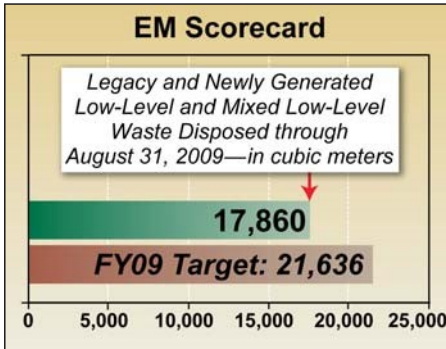
EM UPDATE

Office of Environmental Management



safety ❖ performance ❖ cleanup ❖ closure

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With the Bubble Off, Idaho Plant Rises Fast



The largest of six process vessels for Idaho's Integrated Waste Treatment Unit being hoisted into place on September 2.

On a plateau in the central part of the U.S. Department of Energy's Idaho Site, hundreds of construction workers are swarming over the skeleton of a new waste treatment plant with a deadline in mind—they have to transform the concrete and steel framework into a fully enclosed building before winter arrives.

Once it is complete, the \$570 million Integrated Waste Treatment Unit (IWTU) will start turning 900,000 gallons of sodium-bearing liquid waste into a stable granular material ready for permanent disposal.



Bill Lloyd, left, Director of the IWTU project for CH2M-WG Idaho, LLC, with Ric Craun, IWTU Federal Project Director.

It will also allow DOE to keep its commitment to the State of Idaho under the Idaho Settlement Agreement to treat all the radioactive waste housed at the underground tank farm at the Idaho Nuclear Technology and Engineering Center (INTEC) facility by the end of 2012. The IWTU is located close to the tank farm to ease the process of transferring the waste to the plant for treatment.

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— IN BRIEF —

■ Headquarters: Reorg Plan Advances

The reorganization plan for the Office of Environmental Management (EM) completed its review by the National Treasury Employees Union on September 17 and is now moving through DOE's final review process, with a scheduled implementation date of October 11.

■ Streamlined Process for Property Transfers

The first transfer of property under a new streamlined process was approved by EM on September 4. The transaction involved Building K-1008-F at the Oak Ridge East Tennessee Technology Park, which is being turned over to the Community Reuse Organization of East Tennessee. Under a new ac-

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EM Workshop Sets the Record Straight on a 50-year-old Accident

A panel of scientists shared the results of their historical review of a 1959 nuclear fuel accident last month with interested stakeholders and community members who live in the area of the Santa Susanna Field Laboratory (SSFL) near Simi Valley, Calif.

The scientists reviewed the records relating to the 50-year-old accident at the request of DOE's Office of Environmental Management (EM), which manages the cleanup of the Energy Technology Engineering Center (ETEC) located at SSFL, to assess the scope of the accident and its likely public health impacts.

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Idaho Plant

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The Idaho Site covers 890 square miles in southeast Idaho and includes facilities operated by DOE's Office of Nuclear Energy and Office of Science. EM oversees the Idaho Cleanup Project which is charged with remediating nuclear waste at the site generated by decades of reactor research and development work.

DOE's prime contractor for both the overall Idaho Cleanup Project and construction of the IWTU is CH2M-WG Idaho, LLC (CWI), a joint venture of Denver-based CH2M HILL and San Francisco-based URS Washington Division.

CWI estimates that 40 percent of construction on the three-story 53,000 sq. ft., IWTU is now complete. Since October 2007, when work began, 4,000 cubic yards of concrete have been poured and 600 tons of steel rebar have been set in place to complete the facility's Process Building base slab and walls, as well as the foundations of ancillary structures such as the product, mechanical, and off-gas buildings.

Much of that work went on beneath the cover of a giant inflatable tent that hid the project's progress from view until it was taken down in April. But it allowed work to go on through two Idaho winters and helped the project stay on track with a compressed construction schedule aimed at a completion date of August 2010.

"The tent allowed us to extend our usual five month construction schedule to 12 months," said Bill Lloyd, Director of the IWTU project for CWI. "It (the tent) more than paid for itself in time saved and was quite comfortable to work in even as winter raged on outside. Besides providing a safer work environment, the tent allowed us to continue pouring the specialized

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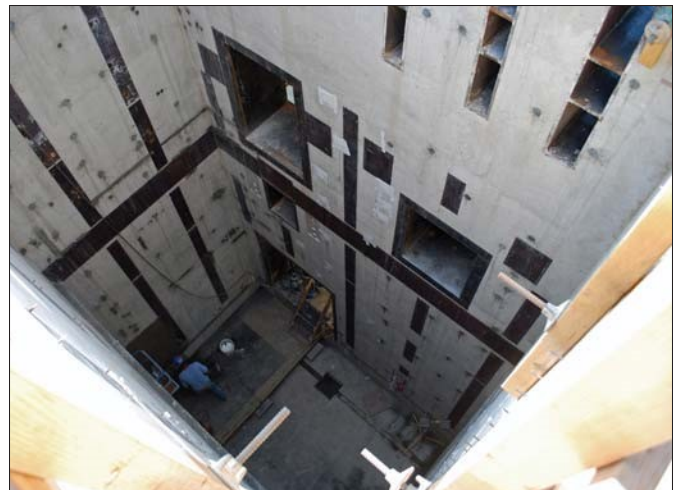


Scott Marhefka, Idaho Cleanup Project construction manager for the Integrated Waste Treatment Unit, speaks to workers at a construction status meeting.



Two Idaho Cleanup Project workers install deck plate material on the mechanical building section of the IWTU.

► *A view inside one of the IWTU's three packaging cells where the final waste product will be packaged into canisters.*



Idaho Plant

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concrete we're using, rather than being delayed by frigid temperatures."

An on-site concrete batch plant has also yielded cost and time savings by allowing crews to mix concrete just hundreds of yards away from the construction site instead of trucking it in 50 miles from Idaho Falls.

Turning Liquids Into Solids with Steam

The steam reforming process that will be used at the Integrated Waste Treatment Unit facility was developed by Thor Treatment Technologies, a joint venture of Studsvik and URS Washington Division. It has been used successfully in a variety of commercial chemical and petrochemical applications.

It is currently treating radioactive wastes generated by nuclear facilities at the Studsvik Processing Facility in Erwin, Tenn.

The process uses fluidized beds to heat liquid radioactive and hazardous constituents to convert them into a stable solid granular waste form. The purpose of the system is to oxidize and convert any organics contained in the waste to carbon dioxide and water vapor. It also converts nitrates and nitrites directly to nitrogen gas.

The final product is a solid waste consisting of mainly inorganic salts that can be placed in canisters and stored awaiting disposition.

A major construction milestone on the new facility was achieved earlier this month with the successful placement of the six largest process vessels, a necessary step before the building's roof and walls can be installed. The largest vessel measured 30 feet high, and weighed nearly 120,000 pounds. Each was encased in a steel support assembly, or "skid" that included its associated piping and instrumentation. Getting all of them in place took careful planning and the help of some of the biggest heavy lift cranes in the country.

"Completing the fabrication and installation of the six major process vessel skids this fall sets the stage to have the facility 'dried-in' before winter weather hits here in Idaho, an extremely important milestone to make in support of completing construction activities on schedule next spring," said Federal Project Director Ric Craun.

"CWI, Premier Technologies and the DOE project team did a great job working through significant technical challenges all the way through the process of forming and welding the special alloy materials, skid fabrication, transportation of the skids to the site, and safely performing the complex critical crane lifts to put these large, heavy skids in place," he added.

The process vessels for the plant were made by Premier Technology, a small business teaming partner for CWI.



The IWTU is going up amid some dramatic Idaho scenery like the butte in the background.



This inflatable heated tent sheltered work on the IWTU through two winters before it was taken down in April.

Premier is a specialty fabrication, construction and design company based in Blackfoot, Idaho.

Nearly a quarter of its 375 employees worked on fabricating the special alloy vessels designed to handle the high temperatures of the steam reforming treatment process that will be used at the IWTU (*see sidebar at left*).

"We gained valuable knowledge and experience working as a small business partner with CWI on this project," said Mike Ryan, Premier's chief operating officer. "The visibility of working on a very large and successful project over a four-year span has helped others to realize that we have the resources

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Idaho Plant

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and the expertise to perform at a high level.”

Even with the vessels in place, there is still plenty to do for the 400 workers on the job. They are working in two teams that log alternate ten-hour shifts, keeping the site active 20 hours a day. They know the steel structure, walls and roof must be finished before the harsh Idaho winter—when temperatures can plunge as low as minus 40 degrees Fahrenheit—starts to close in.

“CWI, Premier Technologies and the DOE project team did a great job working through significant technical challenges.”

**Ric Craun, IWTU
Federal Project Director**

Once construction is complete, operator training, facility readiness testing and hot startup will be the next phases for the project. The IWTU is scheduled to begin waste treatment operations in August 2011. The operations are expected to take approximately 15 months to complete and will allow DOE to meet its December 31, 2012 deadline for completing treatment of all tank waste at the site.

After the waste is treated, DOE will focus on cleaning and permanently closing the last four tanks in the tank farm. The 11 other tanks have already completed this process, which includes removal of the tank contents and cleaning followed by grouting of

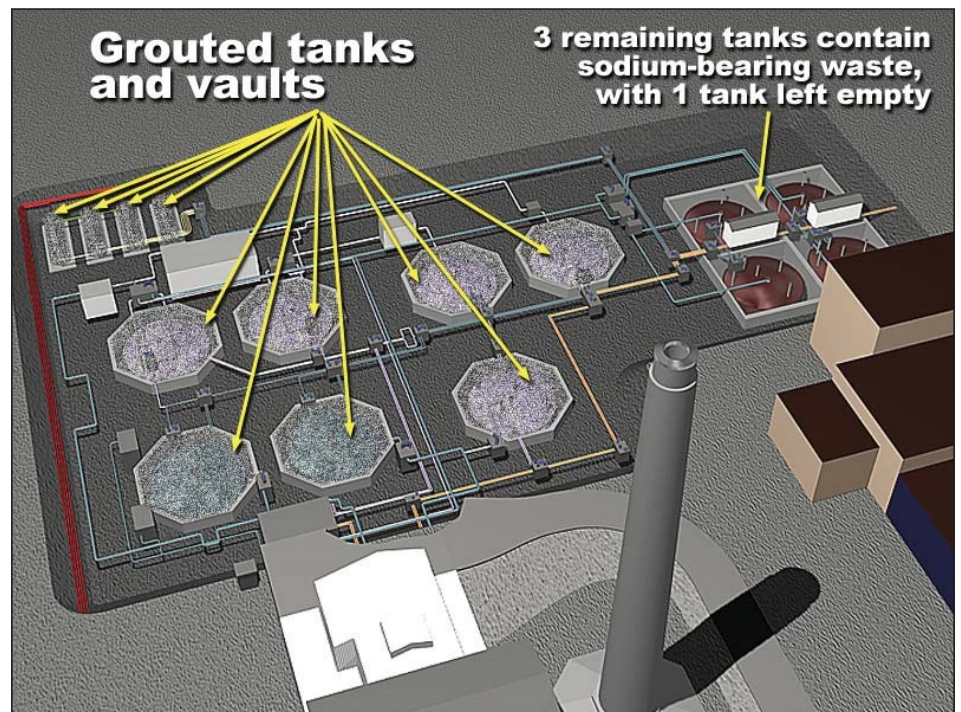
the tanks and the surrounding vaults, piping and equipment. Eventually, the entire tank farm will be capped.

“To complete construction of a facility of this kind in less than three years will be a major accomplishment for the Idaho site,” said Richard Provencher,

deputy manager for DOE’s Idaho Cleanup Project. “The completion of the facility and treatment of the sodium-bearing waste is a major component of the Department’s cleanup program at the Idaho Site.” ■



A rendering of how the IWTU will look when construction is complete.



An overview of the state of the cleanup effort at the tank farm located close by the IWTU.



EM Workshop

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The forum was a six-hour workshop held on Saturday, August 29 at the Grand Vista Hotel in Simi Valley attended by some 150 former Santa Susanna workers, along with members of advocacy groups and interested stakeholders.

“We know that the accident continues to be an important interest to many of our Santa Susanna stakeholders,” said Stephe Jennings, DOE’s NEPA (National Environmental Policy Act) Document Manager for the Environmental Impact Statement (EIS) being prepared for the cleanup of ETEC. She noted that several had asked for a meeting on the accident and its 50th anniversary in July had prompted renewed media and public attention.

“Our goal in hosting the workshop was to provide the community an opportunity to explore different perspectives about the 1959 accident,” she said. “We were absolutely thrilled with the number of stakeholders that attended,” she added.

The accident took place at the Sodium Reactor Experiment (SRE) at the Santa Susanna site. The SRE was one of ten experimental nuclear reactors operated there by the Atomic Energy

Commission, a predecessor agency to the U.S. Department of Energy, starting in the 1950s and 1960s. The reactor operations took place on a 90-acre parcel at Area-IV of SSFL where ETEC is now located.

The SRE accident has generated continuing controversy surrounding EM’s ongoing environmental remediation efforts at ETEC. Watchdog groups and several stakeholders have frequently drawn comparisons between the SRE accident and the 1979 nuclear accident at Three Mile Island in Pennsylvania. Some have claimed that the SRE accident was much more serious.

The SRE was a small, low-pressure sodium-cooled reactor, designed to test sodium as a coolant medium. During July 1959, a partial blockage of sodium coolant occurred in some of the reactor coolant channels. This blockage caused partial melting of 13 of the 43 reactor fuel assemblies that contained uranium metal fuel elements. But not all the fuel elements within the affected assemblies were damaged.

The fuel elements that were damaged released fission products. But the chemistry of the sodium coolant shows that the majority of those products were retained in the sodium coolant. Some gasses—particularly the noble gasses—



Dr. Paul Pickard, left, of Sandia National Laboratories talks with stakeholders at the workshop on the 1959 Sodium Reactor Experiment fuel damage accident.

were held in the decay tanks and released over time. A source of much controversy has been how much and what was released as a result of this incident.

The panel of scientific experts that DOE assembled included Dr. Paul S. Pickard, a senior Scientist/Engineer in the Advanced Nuclear Energy Programs at Sandia National Laboratories in Albuquerque, N.M., Dr. Tom Cochran, a Senior Scientist in Nuclear Programs at the Natural Resources Defense Council (NRDC) in Washington, D.C. and Dr. Richard Denning, a Professor of Nuclear Engineering at Ohio State University.

A team at Sandia National Laboratory, led by Dr. Pickard, looked at the original data on the accident and used current calculation methods to determine what the releases could have been. It concluded the amount of radioactive materials released was much less than had previously been reported. Dr. Pickard’s findings were then reviewed and commented on by Drs. Cochran and Denning. All panelists were provided with copies of more than 80 documents on the SRE

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DOE Federal Project Director Thomas Johnson, right, talks with a stakeholder during the workshop.



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accident to help them prepare their presentations.

The panel members agreed that only damaged fuel had the potential for releasing significant quantities of fission product radionuclides. They estimated the amount of fuel that could have melted—based on a review of the cladding damage and photos showing intact, but loose fuel elements—was between one and ten percent. The general consensus was that it was below six percent—far less than the 30 percent level that some reviewers had calculated based on the total number of fuel assemblies that were affected by the accident.

The remaining fuel elements stayed intact and were considered by the panel members not to have been a release mechanism for fission products. Although the fuel cladding was damaged, the fuel was not.

While acknowledging that more complete information would have been helpful, the panel members also agreed that the amount of noble gas radioactivity releases as a consequence of the SRE accident was too small to have posed a significant risk to the health of the public.

“All of the scientists agreed that the SRE accident was not what it has been made out to be. The panelists were in agreement that estimates of fuel damage were considerably lower than what has been presented in the past and are consistent with our environmental monitoring program at ETEC,” said Thomas Johnson, Federal Project Director for ETEC.

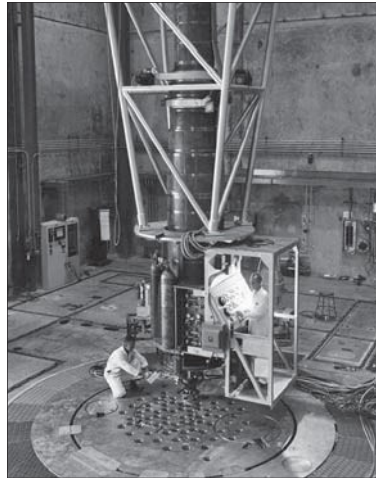
“The panelists also doubted that the SRE would have been the cause of health effects in the area, often blamed on the accident,” Johnson added. And he pointed out that the panelists had refuted another “popular misconcep-

tion” that information about the accident had been kept secret. “Many of the documents on the accident were public and were also shared with scientists and engineers of the era.”

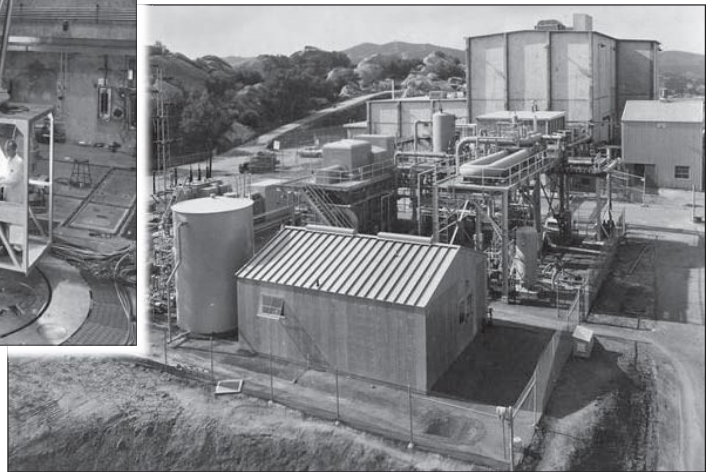
More information is available on the ETEC website: <http://www.etec.energy.gov>. ■



Former workers toured the Energy Technology Engineering Center (ETEC) during a side event the day before the workshop was held.



These 1950s-era photos show the exterior of the SRE reactor complex and the interior of the reactor itself.



EM Update

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– IN BRIEF: NEWS FROM AROUND THE COMPLEX –

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celerated approval process initiated by DOE's Office of Management to comply with a mandate from Secretary of Energy Steven Chu, the entire DOE Headquarters review and approval process was completed in four months, including the mandatory 60-day waiting period for property transfers that do not follow standard Federal practices. This compares to periods of up to 12 months that has been previously required to obtain approval of property transfers from DOE headquarters.

■ Savannah River: Groundbreaking for Biomass Plant

EM Assistant Secretary Inés Triay plans to attend a groundbreaking ceremony on October 1 for the \$795 million biomass conversion plant that is being built to replace coal- and oil-fired electric generating capacity at the Savannah River Site. Ameresco Federal Solutions of Knoxville, Tenn., was awarded an Energy Savings Performance Contract to build and operate the plant earlier this year. Once it is fully operational, the plant is expected to generate \$34 million in annual savings on energy, operation and maintenance costs at the site.

■ Hanford: New Tank Cleaning Tool is Tested

Testing is underway at the Hanford site for a new tank cleaning system designed to safely and efficiently remove material from single-shell waste storage tanks.

The technology, the Mobile Arm Retrieval System (MARS), features a central support mast and hydraulically extendable arm that can reach to all the wall and floor surfaces of single-shell tanks. MARS has two variants—one employs high pressure water sluicing nozzles attached to the end of the arm to move waste to the transfer pump attached to the central



A MARS tank cleaning system is readied for testing at Hanford in a non-hazardous environment.

mast, and the other uses a vacuum system to draw waste to an in-tank staging tank prior to pumping the waste out to the double-shell tank.

Testing of the sluicing version is being conducted first. Follow-on testing of this and the vacuum version of MARS will continue in fiscal year 2010. The first deployment of the sluicing version of MARS is planned for

2011. Successful deployment of this technology should enhance EM's ability to safely and cost-effectively retrieve waste stored in single-shell tanks.

■ West Valley: Video Conference Held on Draft Environmental Impact Statement (DEIS)

Assistant Secretary Triay and Frank Murray, President of the New York State Energy Research and Development Authority (NYSERDA), jointly hosted a successful video conference on September 4 with representatives from various environmental action groups to hear concerns related to the Draft Environmental Impact Statement (DEIS) on the West Valley Demonstration Project. The public comment period for the DEIS closed on September 8. EM is now reviewing the comments received on the DEIS for incorporation into the Final Environmental Impact Statement for the site.

■ Oak Ridge: Roads Get New Names and a New Owner

Officials from DOE's Oak Ridge Office and the City of Oak Ridge signed an agreement September 3 to transition several roadways at the East Tennessee Technology Park to ownership by the city.

The roadways are located in the front area of the site adjacent to recent and upcoming land transfers. They will help provide public

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Signing the agreement are, seated left to right, DOE Oak Ridge Office Manager Gerald Boyd and Oak Ridge Mayor Tom Beehan with Oak Ridge Office officials (standing, left to right) Tracye Baber, Brian Henry, Cindy Finn and Susan Cange who were responsible for the project through the combined efforts of both Oak Ridge's Real Estate Office and its Reindustrialization Program.

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access to two speculative buildings under construction on land parcels that have already been transferred to the Community Reuse Organization.

The roads being transferred have been given new names as part of the process. They include Victorious Boulevard, Chromium Street, Europa Avenue and Meritus Avenue to reflect the science and technology heritage of this Manhattan Project site.

■ Savannah River: Contractor Offers Math and Science Support

Savannah River Remediation (SRR), the liquid waste contractor at DOE's Savannah River Site, has launched a new program to provide educational grants to area schools to support educating students in mathematics and science.

The Student, Teachers Achieving Results (STAR) grants will be awarded directly to elementary schools to fund instructional kits that are proven tools teachers can use to help students achieve next-level learning in mathematics and science. By focusing on problem-solving, these kits are designed to reinforce and expand learning.

"We have schools doing outstanding and exciting things in their classrooms, but many times they are limited in their ability to reach students by a lack of materials and supplies. These grants help schools provide creative and innovative experiences for their students," said Jim French, SRR President and Project Manager.

28 schools submitted applications for the grants by the September 21 deadline. The winners and the amounts of the grants will be announced at a reception next month.

— PEOPLE —

Assistant Secretary Inés Triay has announced the following assignments:

Kerry Watson has agreed to serve as the technical lead for a review of tank waste strategy across EM. He will continue to be based in the Carlsbad Field Office, where he serves as National Transuranic Senior Technical Advisor, but will be making frequent visits to Washington, D.C. and field sites. This effort requires knowledge of highly radioactive waste operations and of the operations and regulatory environment at various EM field locations. Kerry has both and has routinely assisted other field sites in solving complex waste operational issues and has served as the technical lead to improve the efficiency and effectiveness of their waste operations.

Erik Olds, Communication Director for the Office of River Protection at Hanford, has agreed to assist Shari Davenport, the new Director of EM's Office of Communications and External Affairs, in applying best practices, experience and lessons learned from communications activities throughout the complex to EM's overall communications effort. Erik will remain based at ORP but will be making frequent visits to Washington, D.C.

