

New Mexico Nuclear Waste Repository Celebrates 5-Year Anniversary

Deep beneath the earth of the remote Chihuahua Desert, a team of mining experts, scientists, and nuclear waste handling and transportation personnel process thousands of shipments of transuranic radioactive waste.

By Jennifer Pittman

In the high desert of southeastern New Mexico where wind sweeps through low brush in a stark terrain, specially equipped trucks arrive at the U.S. Department of Energy's (DOE) Waste Isolation Pilot Plant to unload radioactive cargo at the world's first underground repository of its kind. The facility, known as the Waste Isolation Pilot Plant (WIPP), celebrated five years of operation in March.

WIPP handles the permanent disposal of transuranic (TRU) radioactive waste, a man-made byproduct of the research and production of nuclear weapons that began accumulating in the 1940s with the beginning of the nation's nuclear weapons program. WIPP presently receives waste from seven major TRU waste generator/storage facilities in addition to numerous smaller facilities with defense-related nuclear waste.

Most waste brought to WIPP consists of clothing, tools, rags, residues and debris contaminated with

small amounts of plutonium. The materials are primarily contained in 55-gallon drums that can weigh as much as 1,000 pounds. For transport, drums are shipped inside larger sealed containers called TRUPACT-IIs. These rugged shipping packages, certified by the Nuclear Regulatory Commission, are designed to maintain their integrity in various accident scenarios. On arrival at WIPP, waste payloads are removed from the TRUPACT-II shipping package and transported to disposal rooms nearly one-half mile underground. The well-lit cavernous area has been mined out of a stable 225 million-year-old rock salt formation.

Permanently disposing of defense-related nuclear waste is a complex undertaking employing nearly a thousand people, including mining experts, scientists and nuclear waste handling and transportation personnel. WIPP is primarily regulated by the U.S. Environmental Protection Agency and the New Mexico

Department of Energy. The idea of a secure nuclear waste disposal facility was researched for decades prior to its opening. There were hundreds of

of it properly,” says John Bennett, project manager with Washington TRU Solutions (WTS). WTS, the management and operating



Transuranic waste is stacked in a disposal room 2,150 feet underground.

scientific studies, years of engineering and construction, and numerous regulatory hearings before the first truck carrying waste from Los Alamos National

contractor for DOE at WIPP, is responsible for day-to-day operations and coordination with numerous oversight and regulatory agencies. “That runs fairly deep in the organization,” adds Bennett. “We’re doing a good thing for the environment and the people who live close to where this waste is now temporarily stored around the nation.”

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Environment Department, but is scrutinized by more than 20 oversight organizations.

YEARS OF STUDY

Although only five years in opera-

Laboratories arrived on March 26, 1999, to the cheers of WIPP workers and supporters.

“You’ll find we strongly believe in the importance of taking this transuranic waste and disposing

LONELY OUTPOST

Located about 26 miles southeast of Carlsbad, WIPP has few neighbors in the remote Chihuahua Desert. Since 1999, more than 2,400 shipments – a total volume of more than 19,000 cubic meters

of waste – have been safely transported to WIPP and disposed of. Each week, as many as 35 loads of contaminated debris and soils arrive at WIPP in TRUPACT-II containers.

“There has been a lot of progress over the years,” says Kathy Kessler, a senior project analyst also with WTS, who has worked at WIPP for 16 years – long before the facility ever opened for full operation. Kessler recalls the excitement of working at WIPP when the underground mine was still under construction. Today, Kessler manages WIPP projects using the latest technology: Primavera and PeopleSoft Financials.

A strong safety culture was adopted during the early construction years and continues to be the top priority at WIPP. “Our main goal has always been safety, not just for our workers but for the public and the environment,” Kessler says. “We wanted to make sure that everything we did was right. It’s been a huge success story.”

UPGRADING THE SOFTWARE

In 2002, in order to increase management’s ability to direct individual projects, integrate TRU waste activities at shipping sites and more accurately forecast projects, WIPP moved the project from Primavera Project Planner (P3) to Primavera P3e. *[Editor’s Note: If, in the future, WIPP chooses to move to a new version of the Primavera solution,*

it will receive Primavera Engineering & Construction. For more on Primavera Systems’ rebranding program, see Primavera Aligns Brand Strategy with Customer Needs on page 6.] WIPP shares information with multiple regulatory agencies and waste-generating operations that need to keep abreast of WIPP’s on-site activities, so the ability to post project information via the Web for managers locally and remotely became vital.

“As we increase the rate of waste shipments and disposal,” Kessler

says, “we continue to improve in efficiency. By using Primavera and PeopleSoft Financials, we are better able to analyze project activities.”

DOE headquarters expanded the responsibilities of the Carlsbad Field Office in 1993, creating the Carlsbad Area Office to lead national TRU waste cleanup and disposal efforts. TRU waste is temporarily stored at multiple waste storage and waste generating facilities nationwide, including several of DOE’s national laboratories.

At present, scheduled ship-

ments arrive at WIPP from seven sites: Los Alamos National Laboratory in New Mexico, Argonne National Laboratory-East in Illinois, Idaho’s National Environmental and Engineering Laboratory, Rocky Flats Environmental Technology Site in Colorado, Savannah River Site in South Carolina, the Nevada Test Site, and the Hanford Site in Washington. Trucks arrive at WIPP day and night.

“There’s never a time when it’s quiet,” Bennett says. “Trucks come in around the clock.

Bennett estimates that the new Primavera technology has allowed WTS to keep up with the operational demands and reduce project control staff by 30 percent.

Everything is choreographed very succinctly. There are requirements to do things at certain times and regulatory limits on the amount of waste that can be stored on site awaiting disposal. The generator sites have a strong interest in helping us meet our obligations so that they can meet theirs.”

Numerous resources have to be shared and Bennett estimates that the new Primavera technology has allowed WTS to keep up with the operational demands and reduce project control staff by 30 percent. “It also helps measure



WIPP trucks transport trailers of TRUPACT shipping containers.

performance against what our plan was. It has been a huge savings in terms of what is required to manage the systems,” Bennett says, noting that the project had split into numerous sub-projects that could be cut out or made functional within themselves.

“One very useful feature is being able to allocate those resources across those projects, to know where we’re underloaded or overloaded to ensure project success. We have regulatory constraints, health and safety constraints, environmental constraints and monetary constraints. We have to be diligent in how we use the taxpayers’ dollars, especially in a rigorous regulatory environment.”

INTEGRATED SOLUTIONS, REDUCED WORK

The integration of PeopleSoft Financial technology with the Primavera software means data is entered a single time, not twice.

The organization can readily calculate earned value analysis, cost performance and cost variances using the combined technologies.

“In the past, scheduling and cost were separated,” Bennett said. “Now that we have them integrated, we can look at our schedule rates and burn rates in light of the schedule and see if we have any issues that we need to resolve.”

With the passing of WIPP’s five-year anniversary, changes are on the horizon. The Environmental Protection Agency recently approved WIPP’s application to dispose of wastes with higher radioactivity levels that require remote handling. The New Mexico Environment Department also must approve DOE plans for “remote-handled” waste, which is expected to take another two years.

“Right now you can walk up

approximately four percent of the total waste to be disposed of at WIPP.”

There are also designs for a larger, rectangular-shaped transportation package, TRUPACT-III, which would be used to ship wastes too large to fit into the TRUPACT-II shipping package. TRUPACT-III would decrease the need to reduce the size or repackage wastes for shipment to WIPP.

The WIPP project has an estimated 35-year operational life. By 2035, the facility is expected to have reached near capacity and it will be shut down. The 30 or so buildings that dot the 16-square-mile federal tract will be removed and the site returned to its original desert state. The repository will continue to be monitored for safe, long-term containment. Only a sophisticated landmark will remain to warn people of the

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to the waste containers and lay your hands on them,” Bennett explains. “That won’t be possible with shielded remote-handled wastes, which will represent

wastes permanently buried deep below the surface. •

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