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- Decontamination & Decommissioning
- Environmental Remediation
- 15th Annual Buyers Guide



An industry built on tearing down

It appears that we are seeing a new industry taking shape before our very eyes. That would be the nuclear decontamination and decommissioning industry. The demand is certainly there. Seven commercial nuclear power plants—San Onofre, Kewaunee, Crystal River, Vermont Yankee, Fort Calhoun, Oyster Creek, and Pilgrim—have closed since 2013, and more closures are on the horizon as reactors reach the end of their operating lives or become the victims of cheap natural gas and renewables or changing national policies.

For the most part, utilities, which are in the business of building and operating energy sources, not tearing them down, are turning to others to manage the D&D work. Stepping into the role of D&D supplier are several companies, both new and familiar (see Headlines, beginning on page 12). Energy-Solutions, which practically invented the third-party D&D business model, is nearing completion of the 10-year decommissioning of the Zion nuclear power plant in Illinois and is actively pursuing additional projects. The company, which is currently working with AECOM on the decommissioning of San Onofre in Southern California, was awarded a contract this spring from the Omaha Public Power District to decommission the Fort Calhoun plant in Nebraska, and it is now negotiating a deal to acquire and decommission the damaged Three Mile Island-2 reactor as part of a joint venture with the New Jersey-based construction company Jingoli.

Meanwhile, New York-based NorthStar Group Services, which after a lengthy process acquired for decommissioning the Vermont Yankee plant from Entergy in January of this year, is also expanding its D&D work. In May, it was announced that Accelerated Decommissioning Partners,

a joint venture of NorthStar and Orano USA, has been contracted by Duke Energy to decommission the Crystal River-3 power reactor in Florida.

Finally, Holtec International is continuing to grow its presence throughout the nuclear supply chain. The company is developing its SMR-160 small modular reactor at the same time as it is pursuing a license for a consolidated interim storage facility in New Mexico. On July 1, the company closed on its acquisition of New Jersey's Oyster Creek nuclear power plant, which will be decommissioned by its Holtec Decommissioning International subsidiary, and is working to

take ownership of the Pilgrim plant in Massachusetts and the Indian Point plant in New York for decommissioning. The company's stated strategy is to use a nuclear fleet approach to decommissioning, building an economy of scale with a standard approach to be used at multiple sites.

While the nuclear industry has broad experience in decommissioning reactors, this somewhat fledgling D&D industry is certain to evolve. Competition is likely to drive innovation, and as companies gain practical experience methods will become refined and processes standardized. To assist in the D&D process, the Waste Management and Decommissioning Working Group of the World Nuclear Association earlier this year released a report that outlines international good practices and gives details on potential methodologies for decommissioning and waste management programs. An excerpt of that report begins on page 24.

Outside of commercial nuclear power, the Department of Energy continues work to reduce the footprint of its legacy sites with the decommissioning of Cold War-era nuclear facilities. Late last year,

The nuclear D&D business continues to evolve as companies pave the way for new construction by clearing out the old.



contractors with the DOE's Office of Environmental Management finished the demolition of the vitrification plant at the West Valley Demonstration Project in New York. Removal of this 10,000-square-foot building, used to solidify about 600,000 gallons of liquid high-level radioactive waste, is a feather in the cap of the DOE's cleanup program. Work crews are now finishing the demolition of seven West Valley ancillary support buildings. A photo feature of the progress being made at the New York site begins on page 29.

This issue of *Radwaste Solutions* also includes three feature articles on environmental remediation, including a detailed look at tracking contamination from a 1968 underground nuclear weapons test in Nevada (page 33), the challenges posed by changing regulations of naturally occurring radioactive materials (p. 43), and the construction of a new interpretive center at the Weldon Spring site in Missouri, which once hosted a uranium processing plant (page 48).

Whether it is decommissioning old reactors or cleaning up legacy waste from years of nuclear weapons production, the future of nuclear depends on our ability to take ownership of our past. Keep turning to these pages, spring and fall, for the latest solutions to the industry's changing radwaste challenges.—Tim Gregoire, Editor



Bringing Down West Valley's Vit Plant

After demolishing West Valley's vitrification facility late last year, crews are in the final stages of bringing down seven ancillary support buildings.

Crews with the Department of Energy's Office of Environmental Management in September of 2018 completed the largest and most complex environmental cleanup achievement at the West Valley site to date: demolition of the 10,000-square-foot vitrification building once used to solidify thousands of gallons of radioactive waste. Since then, Environmental Management and its prime contractor, CH2M Hill BWXT West Valley (CHBWV), have made progress on the demolition of seven ancillary buildings that supported site operations, reducing the footprint and associated legacy risks of the 200-acre West Valley Demonstration Project.

Located near Ashford, N.Y., about 30 miles southeast of

Above: CHBWV employees and subcontract workers with American DND tear down portions of West Valley's vitrification plant in May 2018. Demolition of the main facility, a 10,000-ft², 50-foot-tall building made of thick, reinforced concrete walls, was completed in September 2018. Using heavy equipment and specialized tools, workers tore down the building in three phases, including the safe removal of four in-cell coolers weighing 7,188 pounds each, six shield windows, and a 38,000-pound process crane. In the final phase of demolition, crews removed two doors—one weighing 60 tons, the other 100 tons—as well as cranes and other equipment.

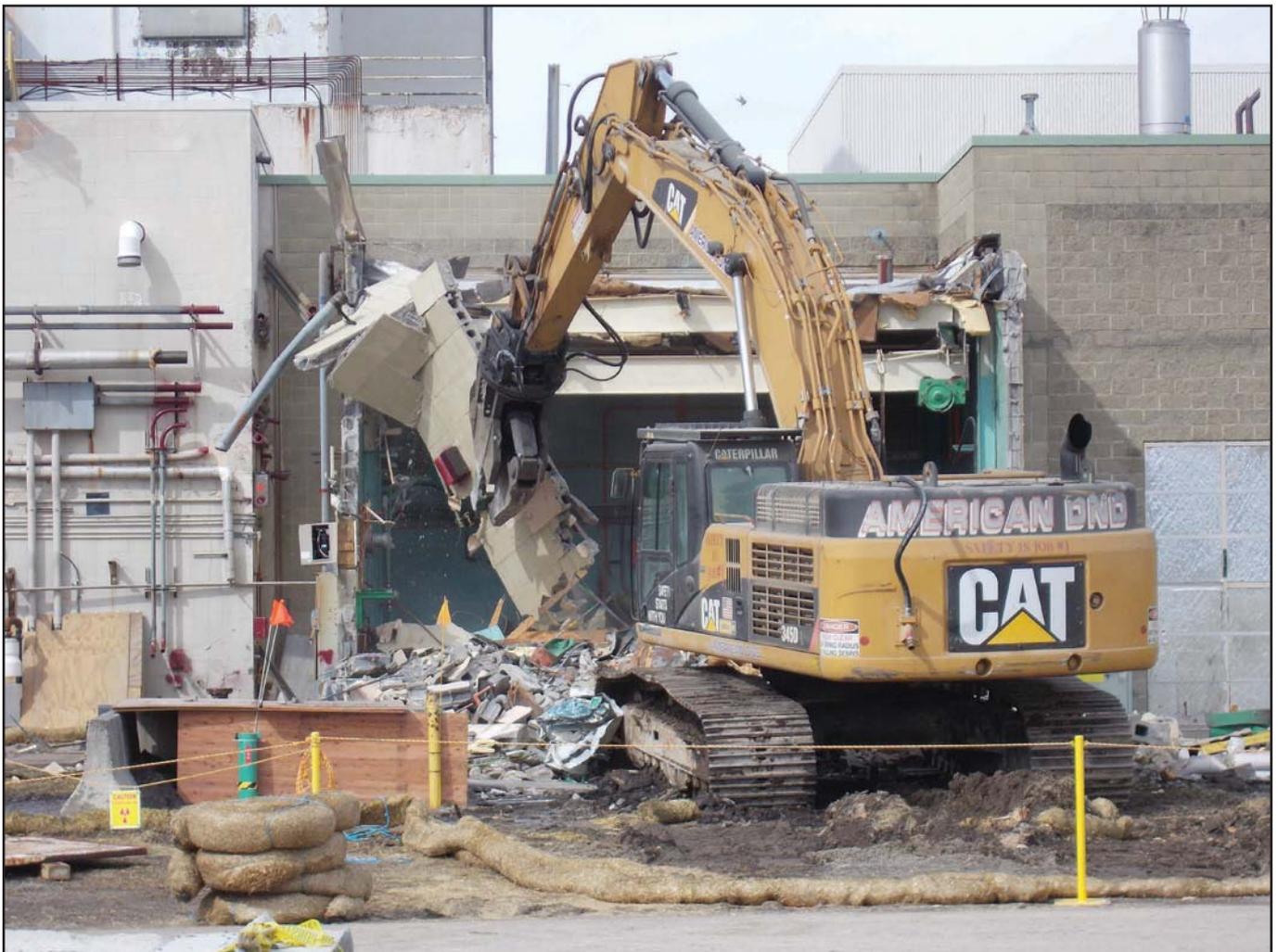
Buffalo, the West Valley Demonstration Project is the site of a former commercial nuclear fuel reprocessing center operated by Nuclear Fuel Services. The plant operated from 1966 to 1972 until, facing escalating regulatory requirements, Nuclear Fuel Services gave up control of the center in 1980, leaving behind the plant's in-process nuclear wastes. Subsequently, the West Valley Demonstration Project Act of 1980 directed the DOE to decontaminate and decommission West Valley and solidify the remaining 600,000 gallons of liquid high-level radioactive waste through vitrification.

From 1996 to 2002, the West Valley vitrification plant solidified the liquid waste, creating 278 stainless steel canisters of borosilicate glass containing approximately 15 million curies. The canisters were relocated from inside the main process building to a temporary storage area on-site in 56 steel-lined reinforced concrete casks with a 50-year design life. They will remain on-site until a federal repository becomes available. D&D of the plant began shortly after with the removal of the facility's three major vitrification components: the melter, the concentrator feed makeup tank, and the melter feed hold tank.

Photos courtesy of DOE Office of Environmental Management and Joseph Pillittere, CH2M Hill BWXT West Valley.



The vitrification plant before crews began demolition work.



The West Valley laundry facility was one of seven ancillary support buildings to be demolished. Originally built in 1964 as the site's maintenance building, the support structure later became the laundry facility in the early 1970s. The 1,456-ft² building was constructed of concrete block, along with a steel frame and concrete slab on grade.

Bringing Down West Valley's Vit Plant



Left: The laundry facility was removed to slab, which was painted to encapsulate any remaining contaminants.

Below: Demolition crews with American DND remove the stairs from the utility room extension building. The support building housed two oil-free air compressors to supply breathing air and instrument air to the site, two boilers to provide steam for heating and process operations, an emergency generator for the site, a control room for utility operations, and an electrical switchgear room that supported the building and its equipment.



A steel beam welded by a hydraulic excavator is used to bring down the walls of the utility room extension. The room was added to the main plant utility room to help augment the site's aging electrical supply system, preventing electrical outages or other complications as the facility melted West Valley's high-level radioactive waste into a stable glass form.



The main plant utility room (left), laundry room (middle), and utility room extension (right) as seen before demolition began. The main plant process building is seen in the background.



Debris from the demolition is loaded and packaged for off-site disposal. Scott Anderson, president of cleanup contractor CHBWW, said, "Protecting the workforce and the environment were paramount during the demolition process. We completed this challenging milestone using lessons learned and look forward to applying those best practices on future projects." ■

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American DND provides services related to the decommissioning and demolition of a facility. There are many phases to a demolition project and American DND personnel have accomplished all aspects and different stages of the decommissioning process. American DND personnel can either assist/augment an existing staff through the decommissioning phases, or American DND can actually perform/contract for those services if requested.



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MANAGING CHANGE

American DND Personnel are experienced professionals at Change Management. Change begins when the decision to decommission a facility is first made and ends when that facility is returned to the original "GREEN" habitat before it was built. ADND's previous project experience allows us to TEAM with a Client and work through the myriad of changing, evolving and emerging issues encountered during the decommissioning process.

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- RFP and Demolition Specification Development

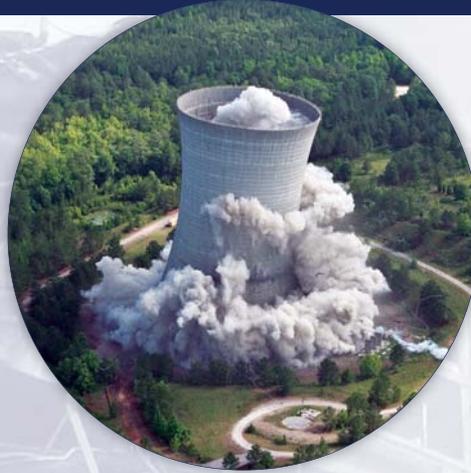
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