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DECONTAMINATION AND DECOMMISSIONING

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SRS Demolishes Massive K Cooling Tower



The demolition of the 450-foot-tall K Cooling Tower at the Savannah River Site is the latest step in the continuing progress on environmental footprint reduction at the DOE site.

The U.S. Department of Energy Savannah River Site's (SRS's) massive K Cooling Tower was safely demolished on May 25 as part of the Site-wide Footprint Reduction Initiative funded by the American Recovery and Reinvestment Act. As the second-largest cooling tower to be demolished worldwide, the 450-foot-tall and 345-ft-wide tower posed a unique challenge to SRS project managers and commanded the attention of even the most seasoned industry veterans.

K Reactor had been shut down in 1988. Because of de-

fense-related needs, however, it was slated to be restarted, and in 1992 a cooling tower was built just south of the reactor facility to cool the water used in nuclear production. Although K reactor was operational in 1992, the project came to a standstill because of the sudden ending of the Cold War, resulting in reduced defense-related needs. K Reactor was once again shut down, and the cooling tower became excessed. The pumps, motors, switch gears, and control rooms were removed or demolished. All that remained was the cooling tower concrete structure.

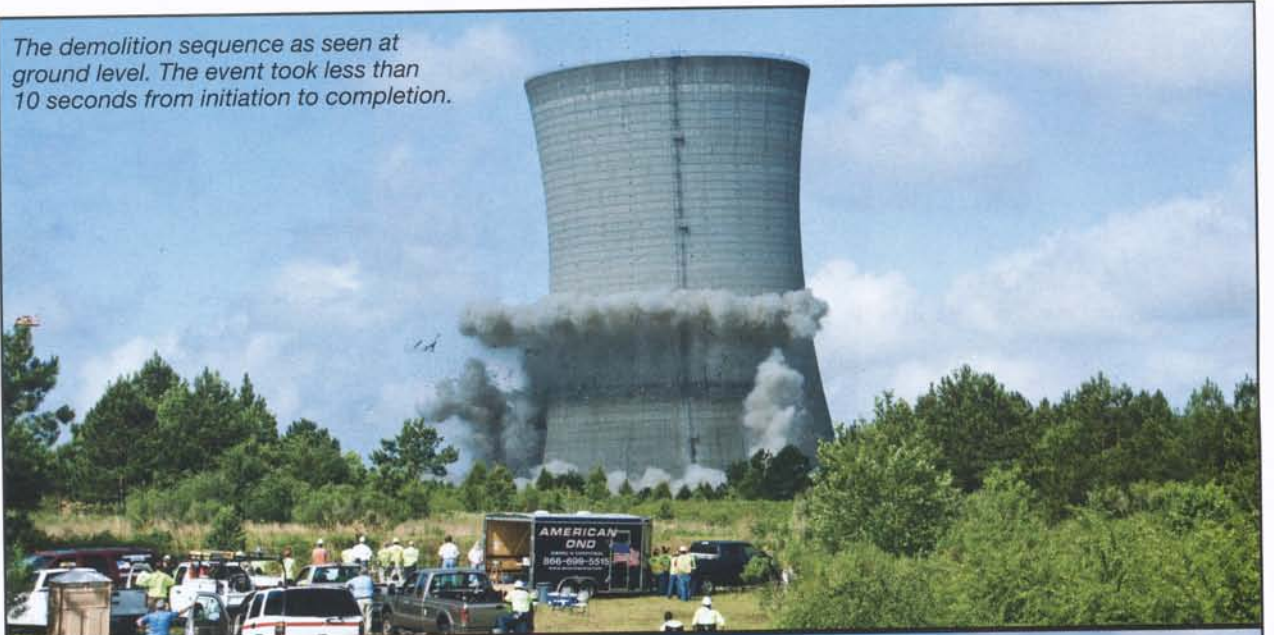
As noted last year on these pages ("Putting the Stimulus to Work," *Radwaste Solutions*, September/October 2009, p. 18), aviation lights atop the tower had to be maintained and changed regularly; consequently, the structure had to be kept in a safe state for workers who attended to the aviation lights. Removing the structure would free up these workers for other decommissioning work.

Above: Constructed in 1992 with 8- to 36-inch-thick walls, the K Cooling Tower stood over a concrete basin that is 345 feet in diameter and 8 ft deep. It was approximately 455 ft tall by 330 ft in diameter at the base. The tower contained approximately 13 000 cubic yards of concrete, which equates to more than 52 million pounds. It also contained approximately 19 500 cubic yards (approximately 200 truckloads) of polyvinyl chloride (PVC) fill and PVC piping, which helped to distribute the water within the tower, and included approximately 1600 tons of rebar, steel, stainless steel, and other metals. All materials will be disposed of onsite at the SRS Construction & Demolition Debris Landfill. After demolition, only the basin underneath the tower will remain.

PLANNING THE DEMOLITION

"The Cooling Tower demolition project is unlike any other closure initiative taking place at the site," said Dewitt Beel-

The demolition sequence as seen at ground level. The event took less than 10 seconds from initiation to completion.



An aerial view of the K Cooling Tower demolition.



Bill Schaab (right), with American DND, and Doug Loizeaux, with CDI, discuss the completed demolition.

er, Savannah River Nuclear Solutions director of Area D&D Projects. "It isn't every day that we deal with the demolition of a structure the size of the K Cooling Tower, and it was clear early in the process that we needed expert help."

After weighing a variety of demolition possibilities, SRS managers chose to hire American Demolition and Nuclear Decommissioning (American DND) to complete the work. For the demolition project, American DND hired an experienced team from Controlled Demolition Inc. (CDI), a Maryland-based, family-owned company with more than six decades of experience in controlled demolitions. CDI also demolished the Trojan cooling tower, which had stood 495 ft tall at the Portland General Electric Trojan facility in Rainier, Ore.

To prepare for D-Day, or Demolition Day, CDI employees carefully planned each increment of work. Preparations commenced in the first week of April 2010. Explosives were delivered to the site on May 14, and assembly loading occurred on May 16. In all, more than 3860 holes were drilled at strategically selected spots in the bottom 250 ft of the tower and loaded with explosives. The project used some 1300 pounds of nitroglycerin-based explosives along with around 20 000 linear ft of detonating cord. CDI detonated the charges in a controlled fashion involving precise sequencing and timing to ensure the tower fell in a selected impact zone.

A SIGNIFICANT ACHIEVEMENT

Now that the tower has been brought to the ground, the rubble will be transported to an onsite landfill for permanent disposal.

"The demolition of the K Cooling Tower marks the achievement of a significant milestone in the Recovery Act mission at SRS. It has allowed us to create new jobs while reducing the site's cleanup footprint," said Rita Stubblefield, deputy federal project director for the DOE. Demolition of the tower moves SRS closer to its goal of achieving a 67 percent operational footprint reduction with the \$1.6 billion federal investment it received under the Recovery Act.

Additional information on the DOE's Office of Environmental Management and the SRS can be found at www.em.doe.gov or www.srs.gov. For more information about the SRS Recovery Act project, please visit www.srs.gov/recovery.

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