

Barnwell LLW Facility Closes to Out-of-Compact Waste

On July 1, 2008, the low-level waste disposal site at Barnwell, S.C., closed to all LLW from generators outside the Atlantic Compact states—Connecticut, New Jersey, and South Carolina. The facility is operated by Energy-Solutions.

The Barnwell facility had been the only LLW disposal site that took Class B and C LLW from all waste generators across the country. The US Ecology LLW disposal facility in Richland, Wash., takes all classes of waste only from 11 states in the Rocky Mountain and Northwest Compacts. Northwest Compact officials have indicated that they will close down the Richland facility if any attempt is made to force the site to accept Class B and C waste from states outside the two compacts.

The EnergySolutions facility in Clive, Utah, takes Class A waste only. For waste generators in 36 states, there is now no facility they can use that will dispose of Class B and C low-level waste.

New Yucca Mountain Cost Estimate; Other YM News

In August, the U.S. Department of Energy's Office of Civilian Radioactive Waste Management said that the estimate of the "total system life cycle" cost of the proposed Yucca Mountain repository has grown to more than \$96 billion, up from the 2001 estimate of \$57.6 billion. According to OCRWM Director Ward Sproat, the increased costs were due to delays in the project, as well as inflation and DOE assumptions that the site will be expanded at some point in the future to make it capable of disposing of more waste.

The new costs estimates are contained in a report that OCRWM expected to release later this summer. A second report due from the agency will detail a recommendation that Congress eliminate the 70 000-metric ton legal cap on the Yucca Mountain disposal limit. Estimates on just how much waste the mountain could hold range from double the current cap to several times that amount. A third report due from OCRWM will conclude that there is no need to raise the 1 mill/kilowatt-hour fee that the DOE charges nuclear utilities to fund the Yucca Mountain project. Growing since 1983, the Nuclear Waste Fund now contains \$21 billion; the DOE has already spent \$9 billion of the fund monies.

● In late June, Sen. Pete Domenici (R-N.M.), completing his last year in the U.S. Senate (he is retiring for health rea-

sons at the end of this term), proposed a new bill that provides an alternative to disposing of spent fuel and high-level waste at Yucca Mountain. The bill, S.3215, the SMART Act of 2008, authorizes the U.S. Department of Energy to enter into contracts to store HLW at two interim storage sites, one in the East and one in the West, while reprocessing plants are licensed and built nearby. Yucca Mountain could not be used for the western site. Costs would be shared between the nuclear industry and the government, and 5 percent of the Nuclear Waste Fund would be allocated to explore the reprocessing/storage alternative. Benefit payments to host communities could be authorized by the Energy Secretary. Yucca Mountain would eventually be used for disposing of military nuclear waste and reprocessing wastes, but not for direct disposal of spent fuel. Because the bill still envisions a use for Yucca Mountain, Senate Majority Leader Harry Reid (D-Nev.) has said he is opposed to it.

● The U.S. House and Senate Appropriations Committees have budgeted some \$386 million for the Yucca Mountain Project for fiscal 2009. Committee recommendations must be voted on by the full House and Senate and signed by the president before they take effect.

● The U.S. Nuclear Regulatory Commission needs to recognize and validate public concerns about shipping spent nuclear fuel as it communicates information about the risks of such shipments, the NRC staff said in an information paper released in late July. The paper, Secy 08-101, notes that risk comparisons are useful in explaining how the risks are managed for the transport of radioactive materials, but adds that the agency needs to explain what it has done to address public concerns, including providing measures for gauging the effectiveness of NRC actions. Gaining public acceptance of the NRC's message will be one of the challenges of its transportation safety outreach efforts, the staff said, adding that it is working with the DOE to develop more effective ways to communicate with the public on transport safety issues.

D&D Updates

● An acid addition to Tanks 5 and 6 at the Savannah River Site began in mid-July, the final cleaning step in the site's closure process for these two tanks. The two 750 000-gallon tanks are scheduled to be closed in 2010. Safely closing waste tanks at SRS involves emptying the waste tanks of bulk waste, then removing as much of the residual waste as possible through various technologies and techniques. Once that's complete, the tanks can be filled with grout, a process that permanently seals the tanks from fu-

ture use while binding any residual waste into the grout. The residual waste left after thorough cleaning, known as the “heel,” is treated with oxalic acid to dissolve it so it can be flushed from the tank. The resulting materials from Tanks 5 and 6 will be transferred into Tank 7.

For more on closing Tanks 5 and 6, see “SRS/Clemson University Partnership Overcomes Challenge to Future Tank Closures,” this issue, page 49.

- The U.S. Department of Energy is evaluating alternatives to safely dispositioning approximately 15 300 tons of radiologically contaminated nickel scrap recovered from uranium enrichment process equipment at the DOE’s Paducah, Ky., and Oak Ridge, Tenn., facilities. The DOE issued a draft Environmental Assessment (EA) in mid-June in which it proposes allowing private industry to use the nickel in DOE-controlled facilities, U.S. Nuclear Regulatory Commission–licensed facilities, or in other regulated radiological facilities to make up high-

quality products for use only in controlled government and/or commercial radiological applications. The draft EA also evaluates two other alternatives: disposal of the nickel as a radioactive waste and continued storage of the nickel. According to the DOE, any planned restricted use of the nickel would not require relief from any of the current restrictions, including the January 2000 moratorium, which prohibits unrestricted release of volumetrically contaminated metal into commerce.

- In late June, the U.S. Government Accountability Office issued a report, “DOE Lacks Critical Information Needed to Assess Its Tank Management Strategy at Hanford” (GAO-08-793). The report states that the DOE lacks comprehensive information about the condition, contents, and long-term viability of Hanford’s waste tanks, especially the older, single-shell tanks. In addition, the report says, the DOE’s time frames for completing tank closure lag by 19 years the date agreed to with its reg-

ulators. In particular, the GAO said, the DOE lacks comprehensive risk information needed to weigh the benefits of pursuing its tank waste removal and closure strategy against growing costs, and has not assessed the risks posed by continuing to store waste in the aging tanks until the waste is removed and cannot demonstrate that benefits are commensurate with the costs of its tank management strategy.

- Hot cells at the U.S. Department of Energy's Oak Ridge National Laboratory are now ready to sort and package remote handled transuranic waste resulting from decades of research activity at the lab. The hot cells became ready to receive waste in late May, following months of preparation by the DOE Oak Ridge Office's Environmental Management Program. The waste will be sorted and repackaged into 55-gallon drums, then placed into TRUPACK containers for shipment to the Waste Isolation Pilot Plant in New Mexico. Shipments are anticipated to begin by the end of 2008, and once under way, approximately 60 to 120 truck shipments will be made annually through 2013.

International Briefs

- The United Kingdom Nuclear Decommissioning Authority has released an "underpinned baseline" for the total cost of the U.K.'s nuclear decommissioning and clean-up program. The project includes decommissioning 26 first-generation Magnox reactors; the Dounreay, Windscale, Harwell, and Winfrith research sites; as well as the Sellafield complex. The discounted nuclear liability is now estimated at £40.7 billion (\$81 billion), with a further £3.4 billion (\$6.8 billion) for the construction and lifetime operating costs of a deep geological waste repository, totaling £44.1 billion (about \$88 billion). The undiscounted costs for the whole 130-year program are £63.5 billion (\$127 billion), of which the NDA's share for construction and operation of the repository is £10.1 billion (\$20.2 billion).

- The Scottish Environmental Protection Agency (SEPA) has completed its assessment of the planning application by Dounreay Site Restoration Ltd. for the construction of a low-level nuclear waste disposal facility. SEPA is among a number of organizations, including the U.K. Nuclear Installations Inspectorate, that have been requested by the Highland Council in Scotland to comment on the proposed facility. The Highland Council is the authority that will grant planning permission for the facility. SEPA has advised the Highland Council that it supports the application "provided a number of planning conditions are imposed to protect people and the environment." These

conditions include a construction method statement, a waste working plan for the construction stage of the project, and an investigation into and assessment of the impact of the facility on surface and ground water. The proposed location of the LLW disposal facility is on land belonging to the U.K. Nuclear Decommissioning Authority, adjacent to the existing Dounreay site. The disposal facilities will consist of a series of shallow subsurface concrete vaults to be built in phases. The facility will be able to hold some 175 000 cubic meters of solid LLW that will be generated by decommissioning Dounreay facilities.

- The French nuclear waste agency Andra began sending out information packets in June to more than 3000 communities having "geology potentially favorable" for hosting a long-lived low-level radioactive waste repository. This waste includes graphite waste from plant decommissioning, radium-bearing waste, and by-products from production of rare earth elements. The agency's generic studies envision a repository in a clay formation at a depth of about 15 meters (about 50 feet). The country's environment minister has asked that Andra conduct a transparent site selection process based on voluntary candidates, and that the process be respectful of local democracy. Andra's goal is to choose a site by the end of 2010, to submit an application to build the repository by the end of 2013, and to begin operations in 2019.

- As of July 1, the Swedish Nuclear Power Inspectorate and the Swedish Radiation Protection Institute have merged. The two former authorities have now formed the Swedish Radiation Safety Authority (SRSA), which will have collective responsibility within the areas of radiation protection and nuclear safety. The SRSA, led by Director General Ann-Louise Eksborgs, employs 250 staffers to handle responsibilities in nuclear power, as well as radon protection, medicine, and ultra-violet and laser light safety.

- Defueling is completed at the Atom Mirny (Peaceful Atom) reactor in Obninsk, Russia. The late June operation was carried out one day before the reactor's 54th anniversary of first operation. The fuel was packaged for interim storage. Atom Mirny was the first power reactor to supply electricity across a conventional transmission grid, beginning operations on June 27, 1954, and supplying electricity to the closed science city of Obninsk in the Soviet Union. It came after the Experimental Breeder Reactor-1 unit in Idaho lit light bulbs using its 100-kilowatt output in 1951 and two years before the United Kingdom's Calder Hall plant provided 50 MWe to the grid in 1956. The first commercial nuclear power plant, the United States' Shippingport unit, started up one year later in 1957. The Atom Mirny plant has been shut down since April 2002 and has been serving as a museum.

- The leading industrialized nations have pledge an extra €62 million (\$98 million) to the Chernobyl cleanup project. The money will come from the Group of Eight industrialized nations: Canada, France Italy, Japan, Germany, Russia, the United Kingdom, and the United States). In addition, Ukraine is increasing its contribution an additional €8 million (\$13 million). The money is being earmarked for the plant's \$275-million spent fuel storage facility, currently under design by Holtec International. The funds come in addition to the €77 million (\$122 million) allocated to the project by the European Bank for Reconstruction and Development from its 2007 profits.

- In mid-July, the United Kingdom's Magnox North organization received approval from the U.K. Nuclear Installations Inspectorate to begin defueling the four-unit Chapelcross station. The plant shut down in 2004. The process is expected to take three and a half years. The plant is being managed by EnergySolutions on behalf of the owner, the U.K. Nuclear Decommissioning Authority.

- The cornerstone of a new spent fuel storage facility in Bulgaria was laid at the end of July. The facility will store all the spent fuel from the six Kozloduy nuclear power plants. The facility, being built at a cost of some €50 million (\$78 million), is designed to last for at least 50 years. Units 1 through 4 at Kozloduy were VVER-440 reactors, all of which have been shut down. Units 5 and 6 are VVER-1000 units and are still operating.

- According to the 2008 annual report from France's National Scientific Evaluation Committee (known in France as the CNE), the country's waste management organization, Andra, should consider disposing of graphite waste from nuclear facilities in a deep geologic repository, rather than in a subsurface facility as now planned. The report stated that while this approach would increase the size and cost of a deep repository, it would provide greater safety because of the graphite's inventory of chlorine-36, a long-lived isotope that requires confinement for at least 300 000 years. ■