

## Sweden Chooses Site for Spent Fuel Repository

Sweden has selected the Forsmark site, in the municipality of Östhammar, as the location for the country's underground spent fuel repository. The decision was announced in early June. The site was chosen over the competitor, Laxemar in the Oskarshamn municipality (which hosts the CLAB interim storage facility, as well as an encapsulation plant), because the rock bodies were said to be drier and with fewer cracks. In addition, a repository at Forsmark would take up less space, meaning an easier construction job. Forsmark already hosts a nuclear power plant and the final repository for short-lived radioactive waste.

SKB, the company in charge of spent fuel disposal in Sweden, plans to apply in the next year to the country's nuclear safety regulators for permission to build the repository. Work at the site could begin by 2013, with full construction beginning in 2015, and operations starting in 2023.

The repository will be designed to isolate the spent fuel for 100 000 years. The spent fuel assemblies will be packed in cast-iron baskets within thick copper canisters and packed in clay some 500 meters below ground in igneous rock.

## France Selects Potential Communities for Long-Lived LLW Disposal Facility

Two communities in France have been selected for detailed investigation of their suitability to host a repository for the disposal of long-lived low-level radioactive wastes. The two communities, Auxon and Pars-lès-Chavanges, are both in the region of the town of Troyes; Auxon is about 30 kilometers (18 miles) southwest of Troyes, while Pars-lès-Chavanges is 50 km (30 miles) northeast. Troyes is 120 km (a little more than 70 miles) southeast of Paris.

The wastes in question have low levels of radioactivity but contain radionuclides with half-lives longer than 30 years. Their origin is primarily graphite from early nuclear power reactors, but also radium-bearing materials from the manufacture of catalytic converters and electronic components, as well as wastes from mineral and metal processing.

If geological and environmental investigations go well in 2009 and 2010, a public debate will take place in 2011, along with a reaffirmation of interest from the two communities (which can end their involvement in the project at any time). If both communities are still agreeable, the government plans to choose a site by the end of 2011. A

construction application would most likely be submitted by mid-decade, with construction taking place a few years later.

## NRC Expresses Concern About Decommissioning Fund Shortfalls

The U.S. Nuclear Regulatory Commission has written to the operators of 26 nuclear power reactors requesting details of how they plan to address apparent shortfalls in their decommissioning funds. In the United States, utilities must put aside between 1 and 2 mills per kilowatt-hour generated to fund the decommissioning of their nuclear power plants. They report to the NRC on the status of their decommissioning fund at least once every two years, annually within five years of planned shutdown, and annually once the plant ceases operation.

The NRC's review of the latest reports on decommissioning funding assurance suggests that several plants must adjust their funding plans. This comes in the wake of the current economic slowdown and last year's severe downturn in U.S. and world stock markets, causing the value of many stock funds and portfolios to decrease significantly.

The plants in question are: Beaver Valley-1, Braidwood-1 and -2, Browns Ferry-1, -2, and -3, Byron-1 and -2, Calvert Cliffs-1, Clinton, Duane Arnold, Ginna, Indian Point-2, LaSalle-1 and -2, Nine Mile Point-1 and -2, Palisades, Point Beach-1 and -2, River Bend, Sequoyah-1 and -2, Vermont Yankee, Waterford, and Watts Bar-1.

The NRC's director of Policy and Rulemaking in the Office of Nuclear Reactor Regulation, Tim McGinty, noted that "This is not a current safety issue, but the plants do have to prove to us they're setting aside money appropriately."

## Court Okays EnergySolutions Import of Italian Waste for Treatment, Disposal

On May 15, the U.S. District Court for the District of Utah ruled that the Northwest Low-Level Radioactive Waste Compact lacked authority to restrict EnergySolutions Inc.'s receipt of waste generated outside the compact region. The decision clears the way for the company to proceed with its contract to import some 20 000 tonnes of LLW from decommissioned nuclear facilities in Italy for processing, recycling, and possible disposal at the company's Clive, Utah, LLW disposal facility.

EnergySolutions has pointed out that the company has been safely disposing of low-level material for more than

## Industry news ▼

20 years and has been disposing of internationally generated material for more than 8 years. The Northwest Compact has never voiced an objection to the Clive facility's disposal of this material until recently, EnergySolutions said in a press release.

### **Gregory Jaczko Named NRC Chairman**

President Barack Obama has designated Gregory Jaczko, the sole Democrat on the U.S. Nuclear Regulatory Commission, to be the agency's chairman. He replaces Dale Klein, whose term of office as chairman was set to end in June 2011. Klein will remain on the panel as a commissioner until his term expires.

Jaczko has a bachelor's degree in physics and philosophy from Cornell University and a PhD in physics from the University of Wisconsin at Madison. Prior to his appointment to the NRC in January 2005, Jaczko served for four years as science policy advisor and then as appropriations director for Sen. Harry Reid (D., Nev.). Jaczko be-

gan his career in the nation's capital as a congressional science fellow in the office of Rep. Edward Markey (D., Mass.), and later served as an advisor to members of the Senate Committee on Environment and Public Works on nuclear policy and other scientific issues. He also was an adjunct professor at Georgetown University, where he taught science and policy. His NRC term expires in June 2013.

[Editor's Note: An article based on a Jaczko speech, "Public Confidence Needed for Successful Low-Level Waste Management," appears in this issue on page 36.]

### **ASLBs Admit 299 Contentions, Eight Parties to Yucca Mountain Hearing Process**

In May, the U.S. Nuclear Regulatory Commission announced that its Atomic Safety and Licensing Boards (ASLBs) for the Yucca Mountain spent fuel/high-level waste repository project have admitted eight parties, including the Nuclear Energy Institute, the states of Neva-

da and California, and a number of counties in both states, to the hearing process that will consider 299 safety and environmental issues in the licensing of the proposed repository.

In the 153-page order, the ASLBs rejected the petition of the Caliente Hot Springs Resort, which failed to demonstrate standing. The Timbisha Shoshone Tribe and the Timbisha Shoshone Yucca Mountain Oversight Program (acting jointly) and the Native Community Action Council were not admitted at this time, because they had not yet demonstrated full compliance with the NRC's Licensing Support Network (LSN), an online data base of documentation related to the proceedings. These petitioners could be admitted as parties at a later date if they demonstrate LSN compliance.

The boards noted that an unusually high proportion of proposed contentions were admitted, but said that many are identical or nearly identical in their arguments. These are likely to be consolidated or grouped together to facilitate case management, the boards said.

[Editor's Note: For more on the Yucca Mountain project, see "Yucca Mountain: Dumped and Wasted?" this issue, page 12.]

### **EPRI: Interim Spent Fuel Storage Facility Could Cost Nearly \$500 Million**

A report being prepared by the Electric Power Research Institute provides a cost estimate for the design, licensing, construction, and operation of a generic interim spent fuel storage facility, considering the primary variables of cask size and facility capacity. The base case cost estimate assumes a 40 000-MTU capacity operating for a 40-year period, with alternative capacities of 20 000 and 60 000 MTU considered as well.

For a 40 000-MTU facility with a capacity of 4000 storage systems, capital costs are estimated to be \$490 million, while decommissioning costs for the fuel storage facility and concrete overpacks are estimated to be \$230 million. Cost elements associated with the difference in capital costs for the various facility capacities include transportation equipment (escort cars, locomotives, and buffer cars required); the number of fuel transfer cells in the canister transfer building; the capacity of the fuel storage facility; the number of rail casks and related equipment required; and site-specific geological condi-

tions associated with the transfer of spent nuclear fuel by rail.

### D&D Updates

- The U.S. Department of Energy's Savannah River Site initiated its first shipment of remote-handled transuranic waste to the Waste Isolation Pilot Plant in late April. Remote-handled TRU waste requires special handling, shipping, and disposal methods due to the waste's radiation levels. To prepare for these shipments, Savannah River Nuclear Solutions brought in specialized personnel to support shipping cask loading and other shipment preparations. Under the American Reinvestment and Recovery Act, the workforce at SRS will grow significantly, and shipments of remote-handled TRU waste will nearly double over the course of the 30-month project. About 4500 cubic meters of TRU waste will be shipped or prepared for shipment as part of the Recovery Act project.
- Retrieval of waste from Tank C-110 at the U.S. Department of Energy's Hanford site is nearing completion. Tank C-110 is located in C Farm near the center of the Hanford site; it is a 530 000-gallon tank, built in 1946. With approximately 90 percent of the waste removed, Washington River Protection Solutions (WRPS), the tank farm management contractor, believes that modified sluicing has reached the limits of the technology to remove any further waste and is preparing documentation for use in decision-making about any future retrieval actions. Work is now moving rapidly in preparation to retrieve waste from a second single-shell tank this summer—Tank C-104, a 530 000-gal tank built in 1943—and transfer it to safer double-shell tank storage. Tank C-104 contains a significant amount of plutonium and uranium. It also contains a host of contaminated legacy equipment, so the entire process is being managed carefully to protect workers and the environment.
- Workers at the U.S. Department of Energy's Savannah River Site H Canyon recently successfully completed processing the last highly enriched uranium (HEU) components from a Nevada Test Site reactor. The reactor, the Super Kukla Prompt Burst Reactor, operated from 1964–1978. It produced an intense pulse of neutron and gamma radiation to measure how well nuclear weapons components and materials withstood bombardment. When the reactor was disassembled, parts were sent to the DOE's Oak Ridge facility for consolidation of surplus nuclear materials. Oak Ridge then sent 324 containers for chemical separation at H Canyon. In April, the last of the Super Kukla material was successfully dissolved and down-blended to low-enriched uranium (LEU) in H Canyon. Like other uranium material stabilized and dispositioned at H

Canyon, this LEU will be shipped to the Tennessee Valley Authority for conversion to commercial reactor fuel for the Browns Ferry nuclear power plant in Alabama.

### International Briefs

- All U.S.-origin high-enriched uranium has now been removed from Australia and returned to the United States. The last shipment, consisting of some 32 pounds (14.5 kilograms) of HEU, left Australia on March 16. It consisted of 159 spent fuel elements from the Australian Nuclear Science and Technology Organization's (ANSTO) former Hifar research reactor at Lucas Heights, near Sidney. The shipment, the ninth from ANSTO, was transported to the U.S. Department of Energy's Savannah River Site. Some 220 pounds (100 kg) of U.S.-origin HEU have been shipped from Australia to the United States since 1998.
- The Netherlands' Central Organization for Radioactive Waste (Covra) will be taking on new material for storage. The low- and intermediate-level radioactive waste storage facility has agreed to help local museums store their artifacts and works of art in its unused storage space for up to 100 years. A pilot project started in 2008 was set up to determine whether a radioactive waste storage facility is suitable as a museum depot, to identify optimal conditions and equipment. The pilot project was successful, and now at least seven museums in the Zeeland region of the Netherlands will start storing artifacts at the facility, under a contract between the museums and Covra that sets out 100 years of cooperation. The Covra facility itself is designed to last for up to 300 years.
- The world's first nuclear-powered icebreaker, the *Lenin*, has been permanently docked in Murmansk harbor. In the coming months, the ship will be converted to an information center and Museum of the Arctic Region and the Development of the Northern Sea Route. It has previously been undergoing decommissioning at Atom-Flot's ship decommissioning facility. The ship entered service in 1957, and operated until 1989.
- Dounreay Site Restoration Ltd. has received planning permission for low- and intermediate-level radioactive waste treatment facilities at the Dounreay site in Scotland, which is undergoing decommissioning. The new facilities will treat LLW and ILW from the site's decommissioning projects. The facilities, two of the largest construction projects needed to complete the site cleanup, will cost more than £300 million (\$490 million) to construct and will have a combined capacity of almost 200 000 cubic meters of waste. Construction of the LLW facility is due to begin in 2011, with the first of the vaults ready to receive waste in 2014. Construction of the ILW facility is scheduled for 2010–2013. ■