

Yucca Mountain in the News

● In late October, the U.S. Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM) announced that it has instructed its managing contractor to devise a plan to operate the Yucca Mountain repository as a primarily "clean" or non-contaminated facility. This change in direction, outlined in a letter to Bechtel SAIC, the managing contractor, means that most spent nuclear fuel would be sent to the repository in standardized canisters that would not require repetitive handling of fuel prior to disposal. Prior to the announcement, plans had called for shipping spent fuel assemblies in various types of canisters to the repository, where workers would empty those canisters and place the fuel in special disposal canisters. This announcement now places the burden of final canister loading on the utilities operating nuclear power plants.

According to the DOE, switching to a clean facility frees the project from having to construct several multi-million-square-foot, multi-million-dollar fuel handling facilities. It also reduces the potential hazards caused by the oxidation of bare spent fuel during handling. "The old plan is complex and adds a dimension of uncertainty to obtaining a [U.S. Nuclear Regulatory Commission] license," noted OCRWM Acting Director Paul Golan. "The program needs to make a solid, fully defensible technical case to the [NRC], and this change takes a degree of complexity out of the licensing process."

The letter specifies development of a "conceptual design," or CD-1, package that addresses simpler surface facility and canister operations. The final package will be submitted to the Secretary of Energy's Acquisition Advisory Board for review. If the board approves the package, it will become the project's baseline design.

● The move to a clean facility also means that the DOE will not know for several

more months when it will be able to submit the repository license application to the NRC. It could take the DOE some three to six months to review a contractor report on actions necessary to develop and deploy a canister system that would eliminate most fuel handling activities at Yucca Mountain. That report was due to be delivered to the DOE before the end of 2005. In addition to delaying the date for delivery of the license application, the program change will also most likely further delay the operation date of the facility, which had already slipped from 2010 to a date ranging between 2013 and 2016.

● The recent delays in the Yucca Mountain project have not escaped the attention of the U.S. Congress, which voted in November to a fiscal 2006 budget of \$450 million for that project, \$127 million below the fiscal 2005 level and \$201 million below the Bush administration's original budget request. The conference committee report noted that with the delay in submitting the license application, the project would need less money for the 2006 fiscal year.

Opening the Door to Spent Fuel Recycling

Congress has approved \$50 million for the U.S. Department of Energy to plan for and to initiate a competitive site selection process to develop one or more integrated spent fuel recycling facilities. The money for the facilities, which would include separation of spent fuel, fabrication of mixed-oxide fuel, vitrification of waste products, and process storage, is not to come from the Nuclear Waste Fund.

The conferees also told the DOE not to limit the site competition to just DOE sites, but to consider a wide range of federal and non-federal sites on a strictly voluntary basis. The

Correction

In the "Headlines" section of the November/December 2005 issue of *Radwaste Solutions*, we stated incorrectly that "the International Atomic Energy Agency has selected the decommissioning of the Salaspils research reactor in Latvia as its decommissioning demonstration project." While it is true that the agency has had a Technical Cooperation project with Latvia for several years to assist in the decommissioning of the Salaspils reactor, Latvia has not been considered as a candidate for the demonstration project. At press time in late November, a country and reactor for the demonstration project had not yet been selected.

Radwaste Solutions regrets the error.

DOE must submit a program plan to Congress by March 31, 2006, initiate site selection by June 30, and select a site or sites in fiscal 2007. Actual construction on a facility would begin in fiscal 2010.

Recycling is gaining new proponents as the schedule for the Yucca Mountain repository project slips further and further into the future. And with the recent approval of a license for the Private Fuel Storage LLC venture in Utah, that state's officials (including its two senators), who adamantly oppose the project, have begun speaking out in favor of fuel recycling as well. And presentations at the recent American Nuclear Society Winter Meeting, held in mid-November in Washington, D.C., featured several presentations on recycling, including one from Jacques Besnainou, from the French company Areva, proposing to build a reprocessing plant in the United States that could begin operating as soon as 2020.

GAO: DOE Not Always Choosing Best LLW Disposal Options

According to a recent report by the Government Accountability Office, the U.S. Department of Energy and its contractors are not always making the best decisions on where to dispose of DOE low-level radioactive waste because the DOE has provided "weak" guidance on life-cycle cost analysis and provides little oversight to contractors attempting to implement the analysis in their decisions. The report, GAO-06-94, titled "Department of Energy: Improved Guidance, Oversight, and Planning Are Needed to Better Identify Cost-Saving Alternatives for Managing Low-Level Radioactive Waste," was released on October 31, 2005.

According to the report, the DOE directed its sites to use life-cycle cost analysis to manage LLW. Life-cycle cost analysis examines the total cost of various options to manage LLW over its life, including its packaging, treatment, transport, and disposal, to identify the lowest-cost alternative. (In 2004, the DOE disposed of more than 378 000 cubic meters of LLW—contaminated building rubble, soil, and debris.)

The GAO found during visits to six DOE sites, representing more than 70 percent of the LLW disposed of

by the DOE during 2003 and 2004, that they did not consistently use life-cycle cost analysis. As a result, the report said, the DOE cannot ensure that lowest-cost LLW management alternatives are identified, so that managers make decisions that fully weigh costs against

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noncost factors, such as safety and schedule. For example, DOE contractors at two sites did not consistently consider alternative transportation modes or post-closure maintenance and surveillance costs of disposal sites in their analyses for fiscal year 2004 disposal decisions. GAO also could not always determine how contractors used cost analyses in disposal decisions because of incomplete documentation.

According to the report, the DOE has recognized that its current approach—having each site responsible for developing mechanisms necessary to control costs—may result in cost inefficiencies and may limit its ability to meet department-wide strategic objectives. As a result, the GAO said, the DOE plans to begin implementing a national LLW disposition strategy by March 2006 to better coordinate disposal efforts—although specific schedules have not yet been established for when the strategy will be fully in place.

However, the report continues, the DOE faces challenges in developing and implementing this strategy. First, it needs to gather complete data on the amount of LLW needing disposal. Second, the fact that the DOE's multiple program and site offices have differing missions and oversee many contractors presents coordination challenges. For example, one program office dismantled and disposed of a supercompactor used to reduce the volume of large LLW items without a DOE-wide assessment of

LLW compacting needs and without considering other potential cost-effective uses for the supercompactor that might benefit other DOE sites. Third, the DOE faces state actions that have restricted access to disposal facilities, making it more difficult to coordinate and integrate disposal department-wide.

The GAO made the following four recommendations to the Secretary of Energy:

- Prepare comprehensive guidance on life-cycle cost analysis that, at a minimum, specifies (1) a systematic, consistent method of analyzing all cost elements or of comparing key alternatives within these cost elements to determine the lowest cost; (2) when and under what circumstances sites should prepare cost analyses; (3) relevant DOE orders, manuals, or other reference materials that should be consulted to provide consistent direction on how and when to perform the analysis; and (4) how final LLW management decisions should be documented to demonstrate that life-cycle cost factors were adequately weighed against noncost factors, such as safety, health, or schedule.
- Incorporate the revised life-cycle cost guidance into new or existing site contracts or into the departmental orders cited in those contracts.
- Direct the DOE to oversee contractors to ensure that site contractor officials properly use life-cycle cost analyses in evaluating LLW management alternatives.
- Actively promote and monitor the development of a timely, national LLW management strategy that is based on department-wide data on LLW needing disposal, and ensure that the implementation of the strategy is fully carried out.

D&D Updates

- Cleanup at the Rocky Flats Environmental Technology Site, a facility that produced “triggers” for nuclear weapons during the Cold War, was declared complete on October 13. The announcement represents the culmination of a 10-year effort to complete the largest, most complex environmental cleanup in U.S. history. Rocky Flats is also the first large nuclear weapons facility to be decommissioned and closed anywhere in the world. The site will become a national wildlife refuge. During the clean-

up project, Kaiser-Hill, the cleanup contractor, removed more than 21 tons of weapons-usable nuclear materials, decontaminated and demolished 800 structures, comprising more than 3 million square feet, drained 30 000 liters of plutonium solutions, size-reduced more than 1450 contaminated glove boxes and 700 tanks, stabilized and pack-

Fluor Fernald expects to complete the cleanup by summer 2006, ahead of the target completion date of the end of 2006.

aged 100 tons of high-content plutonium residue, and safely shipped more than 600 000 cubic meters of radioactive waste.

- Decommissioning of the Saxton plant has been completed. The 23.5-MW plant had been shut down since 1972, but full decommissioning activities did not begin until 1996.
- In early November, Fluor Fernald, the contractor responsible for cleaning up the U.S. Department of Energy’s former uranium production plant, had reached the midway point in removing the highest profile radioactive materials associated with the environmental cleanup. The 1790th canister of treated material from Silos 1 and 2 (also known as K-65 material) was produced in the onsite treatment facility. Plant operators anticipate that fewer than 4000 canisters will be needed to treat the 8900 cubic yards of radium-bearing residues. The treatment facility is working 24 hours a day, seven days a week. On a typical day, between 20 and 30 canisters are produced through three treatment lines. Treatment and shipping operations are expected to be completed in late February/early March, at which time the treatment facility and support structures will be turned over for demolition. Fluor Fernald expects to complete the cleanup by summer 2006, ahead of the target completion date of the end of 2006.

- Completing a process that began last year, the National Nuclear Security Administration (NNSA) has successfully removed the most sensitive nuclear weapons-usable materials from Los Alamos National Laboratory's Technical Area 18 to more secure locations. The nuclear materials have been sent to the Nevada Test Site, the Y-12 National Security Complex, and Los Alamos's Technical Area 55. NNSA hopes to have all nuclear materials out of TA-18 by 2008.

- On September 30, BNG America completed demobilization of the company's Three Building Decommissioning and Decontamination Project at the East Tennessee Technology Park in Oak Ridge, Tenn. The project began in 1997. BNG America was responsible for the removal and disposal of equipment and the decontamination of three Cold War-era gaseous diffusion buildings known as the K-29, K-31, and K-33 buildings.

- Budget concerns, on top of seismic issues, may delay completion of Hanford's Waste Treatment Plant (WTP) complex, currently scheduled to be in operation in 2011. The project was underfunded in 2005 by \$64 million (\$625 million instead of the \$689 that the project contractor, Bechtel, felt was necessary for what it considered the first year of a three-year push toward completion), at the same time that Bechtel was dealing with a re-engineering effort to address seismic concerns for the Pretreatment Plant and the High-Level Waste Vitrification components of the WTP. The \$526 million budget for fiscal 2006, part of the Fiscal 2006 Energy and Water Appropriations bill, as passed by Congress in November and signed by the president, is \$100 million less than the \$626 million budget request. A Bechtel spokesman said that the funding cut will likely result in layoffs, construction delays, and higher costs to complete the project, and that the company hoped to have a better idea of a new completion date and a new final cost estimate by spring 2006.

Interestingly, other projects on the Hanford site received budget increases over the president's request, including the river corridor closure project and nuclear materials stabilization and disposition.

- Despite potential budget cuts and delays for the WTP, CH2M Hill Hanford Group continues to remove waste from the Hanford Reservation's tanks. In late October, the company announced that it was beginning retrieval of waste from tank C-201, the third of four so-called C-200

series tanks to be retrieved using vacuum retrieval technology. And in early November, the company began retrieving waste from single-shell tank C-103, using modified sluicing technology. Since completing retrieval activities on tank C-106, two smaller tanks, C-203 and C-202, have been retrieved, and retrieval is also under way on single-shell tanks C-112 and S-102. The waste removed from single-shell tanks is being transferred to safer double-shell tanks, where it will remain until it can be treated and vitrified in the WTP. To date, approximately 350,000 gallons of waste have been successfully transferred.

International Briefs

- Some 90 percent of voters in the South Korean city of Gyeongju voted to support a proposal to host a national repository for low-level and medium-level radioactive waste. A conceptual repository design should be ready in early 2006, followed by contractor selection. Senior Korean officials project that the facility could begin receiving waste by the end of 2008. Korea has had a long and sometime acrimonious road to repository siting. A deciding factor in the successful conclusion of this siting attempt was the agreement by Korea Hydro & Nuclear Power Co., the largest generator of low- and medium-level waste in the country, to move its corporate headquarters from Seoul to the winning candidate city. According to reports, the company will move its headquarters to Gyeongju by the end of 2010.

- A Canadian government advisory group has recommended that the country's spent nuclear fuel be buried in a deep repository in the Canadian Shield (hard rock). The final report from the Nuclear Waste Management Organization (NWMO), issued in early November, said the deep repository represents the best scientific and technological choice. If the report is accepted by the government, NWMO would most likely begin a site search in Saskatchewan, Ontario, Quebec, or New Brunswick (four provinces involved in either uranium mining or nuclear power production), although sites in other provinces will not necessarily be excluded from consideration. NWMO envisions that the entire cycle from the beginning of the site selection process to final repository closure will encompass some 150 years. ■