NRC Dockets Yucca Mountain License Application; EPA Issues Final YM Radiation Standard; Other Program Updates

September 2008 was an eventful month for the Yucca Mountain project. On September 8, the U.S. Nuclear Regulatory Commission formally docketed the U.S. Department of Energy's license application to construct a proposed high-level nuclear waste/spent nuclear fuel repository at Yucca Mountain, Nev. The NRC staff also recommended that the Commission adopt, with further supplementation (on groundwater issues), the DOE's Environmental Impact Statement for the repository project.

Docketing the application does not indicate whether the Commission will approve or reject the construction authorization for the repository, nor does it preclude the Commission or agency staff from requesting additional information from the DOE during the course of the comprehensive technical review.

The decision to docket the application follows the NRC staff's determination that the application, submitted June 3, is sufficiently complete for the staff to begin its full technical review. Docketing the application does not indicate whether the Commission will approve or reject the construction authorization for the repository, nor does it preclude the Commission or agency staff from requesting additional information from the DOE during the course of the comprehensive technical review.

Docketing the application triggers a three-year deadline, with a possible one-year extension, set by Congress for the NRC to decide whether to grant a construction authorization. NRC officials have stated that meeting this deadline is contingent on the agency's receiving sufficient resources from Congress.

- On September 30, the U.S. Environmental Protection Agency at long last issued the final radiation standard for the proposed repository at Yucca Mountain. The final standard will retain the dose limit of 15 millirem for the first 10 000 years after disposal; establish a dose limit of 100 mrem annual exposure per year between 10 000 years and one million years (down from 350 mrem/yr in the draft standard released some years ago); require the DOE to consider the effects of climate change, earthquakes, volcanoes, and corrosion of the waste packages to safely contain the waste during the million-year period; and be consistent with the recommendations of the National Academy of Sciences by establishing a radiation protection standard for this facility at the time of peak dose up to one million years after disposal.

The average annual radiation exposure from both naturally occurring and human-made sources of radiation for a person living in the United States has been estimated to be about 360 mrem per year.

- A September 4 letter to the DOE from the Nuclear Waste Technical Review Board (NWTRB) raised issues on the DOE's Total System Performance Assessment for the Yucca Mountain license application (LA). The letter was the outcome of a May 29, 2008, meeting between the Board and the DOE. The NWTRB specifically was concerned about the uncertainty over the extent to which the drip shield reduced calculated doses by extending waste package lifetime, and about the potential for damage of the Alloy-22 waste package by deliquescence-induced localized corrosion. In his September 18 response to the Board letter, Ward Sproat, director of the DOE's Office of Civilian Radioactive Waste Management, which oversees the Yucca Mountain project, stated that now that the NRC has docketed the LA, the DOE will abide by the NRC's "structured process for raising and resolving LA-related issues."
- At the end of September, the executive director of the Nevada Agency for Nuclear Projects, Bob Loux, resigned, amid questions over whether he illegally gave pay raises to

himself and others in his office. The Nevada Agency in general and Bob Loux in particular have been ardent opponents of the Yucca Mountain project since the early days of work at the site. Loux said working at the office had been his "life's work" for 32 years, and that he did not want the controversy over the pay raises to distract the agency from fighting the project. His replacement will be appointed by the state's governor, Jim Gibbons.

NRC Delays Ruling on Waste Imports from Italy

The U.S. Nuclear Regulatory Commission announced in early October that it was delaying a decision on whether to allow EnergySolutions to import low-level nuclear waste from Italy for processing and disposal in the U.S. The Commission will wait until a federal court decides if an interstate nuclear waste compact can block the action.

EnergySolutions wants to bring in 20 000 tons of low-level waste from Italy for processing in Tennessee. After processing, about 1600 tons would be disposed at the company's Clive, Utah, disposal facility.

Utah is a member of the Northwest Interstate Compact on Low-Level Radioactive Waste. The state has been a supporter of EnergySolutions operations since the 1990s, but withdrew its support in the case of the Italian waste imports. The state instead asked the compact to block the import, and the compact ruled earlier this year that the Clive site can be used only for disposal of domestic waste. In turn, EnergySolutions filed a suit in federal court against the compact, arguing that the compact has no authority over the operations of the Clive facility, which was developed outside of the compact system. Utah has agreed to sign on as an additional defendant in the case.

No date has been set for a ruling on the case.

Proposed Revisions on NRC Waste Confidence Decision

The U.S. Nuclear Regulatory Commission is seeking public comment on proposed revisions to its waste confidence findings, in particular whether the finding should continue to include a timeframe for the availability of a repository for high-level nuclear waste disposal. The proposed revisions, published and discussed in two separate notices in the October 9, 2008, *Federal Register,* are intended to support the agency's reviews of license applications for new commercial power reactors by resolving appropriate issues generically in rulemaking.

The waste confidence findings were first issued in 1984, subsequently revised in 1990, and reaffirmed in 1999. They state the commission's confidence that a geologic repository would be available sometime in the first quarter of the 21st century and that spent nuclear fuel can be safely stored without significant environmental impacts for at least 30 years beyond the licensed operations of a reactor, including the term of a renewed license.

The proposed revisions would predict that repository capacity will be available within 50 to 60 years beyond the licensed operation of all reactors, and that spent fuel generated in any reactor can be safely stored without significant environmental impact for at least 60 years beyond the licensed operations of the reactor.

The agency is also seeking comment on whether a timeframe for the availability of a repository should be included at all. The NRC stressed that eliminating the 2025 timeframe is not intended to signal a lack of confidence that a repository will be available by that date. Rather, the NRC believes that deleting this date will remove even an appearance of prejudgment in the licensing proceeding for the proposed Yucca Mountain repository.

Public comments on the proposed revisions will be accepted through December 8, 2008.

GAO: Accountability Improvements Needed at DOE Cleanup Sites

In September, the U.S. Government Accountability Office, the investigative arm of the U.S. Congress, issued report GAO-08-1081, "Nuclear Waste: Action Needed to Improve Accountability and Management of DOE's Major Cleanup Projects." The report cited life cycle baseline cost increases and/or schedule delays at 9 out of 10 U.S. Department of Energy cleanup projects the Office reviewed. The GAO said that often schedule assumptions were not linked to technical or budget realities, and the DOE's scope of work included other assumptions that did not prove true. Most of the cost increases and schedule

delays were the result of previous baselines that had not fully foreseen the type and extent of cleanup needed, assumed that construction projects needed to carry out the cleanup work would be completed on time, and had not expected substantial additional work scope.

While the DOE uses several types of reporting methods for overseeing cleanup projects, these methods do not always provide managers with the information needed to effectively oversee the projects or to keep Congress informed on the projects' status.

The report stated that the DOE has not effectively used management tools—including independent project baseline reviews, performance information systems, guidance, and performance goals—to help oversee major cleanup projects' scope of work, costs, and schedule. For example, the GAO said, the DOE's independent reviews, meant to provide reasonable assurance that a project's work can be completed within the baseline's stated costs and schedule, have not done so for 4 of 10 projects. For one project, the report said, the baseline was significantly modified as little as 7 months after it had been revised and validated by the independent review. Other projects have experienced life cycle cost increases of as much as $9 billion and delays of up to 10 years, within 1 to 2 years of these reviews. Also, while the DOE uses several types of reporting methods for overseeing cleanup projects, these methods do not always provide managers with the information needed to effectively oversee the projects or to keep Congress informed on the projects' status. Therefore, the report said, the DOE may be missing opportunities to improve management across projects. In addition, guidance for key management and oversight functions are spread across many different types of documents and are unclear and contradictory. As a result, project managers do not consistently implement this guidance, which may lead to problems in effectively managing risks across projects. Finally, the report said, the DOE recently changed it goals for "successful" cleanup projects, reducing the amount of work and raising the allowable cost increases against the near-term baseline.

The GAO noted that the DOE agreed with the GAO's recommendations, and has initiated several actions to improve project management.

D&D Updates

- Two new major contractors officially took over work at the U.S. Department of Energy's Hanford Site on October 1. Washington River Protection Solutions took over the management and operation of the site's tank farms, under a $7.1 billion, 10-year contract. The project also includes emptying the tanks to prepare for operation of the vitrification plant now under construction. That work had most recently been overseen by CH2M Hill Hanford Group.

The central plateau cleanup is now being led by CH2M Hill Plateau Remediation Co., under a $4.5 billion, 10-year contract. This work includes cleaning up contaminated soil and groundwater and decontaminating and decommissioning the K East and K West Reactors. The work had previously been overseen by Fluor Hanford, which will continue to provide site-wide services until a new mission support contractor is in place.

Mission Support Alliance won the $3 billion contract to provide mission support services at the site, for a period of up to 10 years. Mission Support Alliance is a limited liability company that includes Lockheed Martin Integrated Technology, Jacobs Engineering Group, and Wackenhut Services. The contract covers services needed across the Hanford site, such as security, fire protection, computer services and other information technology, utilities, training at HAMMER, and road and rail services.

The transition was to begin October 1, and Mission Support Alliance was to assume full responsibility on January 1, 2009. However, a protest was filed against the contract award, and the U.S. Government Accountability Office will take up to 100 days to resolve the protest, the DOE said. The DOE did not say who filed the protest, but the other finalist for the contract is Computer Sciences Corp., otherwise known as CSC, which had teamed with Battelle, operator of the Pacific Northwest National Laboratory in Richland, Wash.

- Oak Ridge National Laboratory sent its first shipment of transuranic waste to the Waste Isolation Pilot Plant, in New Mexico, at the end of September. A truck loaded with

three Trupact-II shipping containers left the Oak Ridge site on September 24 and arrived at WIPP the next day.

International Briefs

- Sogin (Societa Gestione Impianti Nucleari), the company responsible for nuclear decommissioning in Italy, has developed a new business plan for 2008–2012, which calls for speeding up work and saving money. The decommissioning process was 8 percent completed in 2007, but Sogin would like to be at 41 percent completed in 2011, and 51 percent completed in 2012. The company's former plan projected 37 percent completion in 2011. Sogin plans to increase its monetary investment in the work by close to 20 percent.
- German state and federal regulators have agreed to transfer the responsibility for the Asse low- and intermediate-level nuclear waste repository to the Federal Radiation Protection Agency, which is an administrative arm of the Federal Ministry of Environment and Nuclear Safety. The project had been under the control of the Helmholtz Center Munich, as part of the Federal Ministry of Research. As a result of this change and others agreed to in early September, the planned decommissioning of the site (scheduled for 2014) may be delayed or may become more complicated. One possibility being mentioned is that the waste currently in the repository may have to be retrieved, inspected, and repackaged if necessary. In the larger picture, the nuclear industry in Germany is concerned that a longer term impact of the change of oversight could be a new requirement that all waste disposed of in a German repository be retrievable. At the current time, retrievability is not formally required by German law.
- The dismantling of building structures at the uncompleted third unit at Lithuania's Ignalina nuclear station has been completed. Construction of the unit began in 1985, but was suspended in 1988 when the unit was about 50 percent complete. According to the plant manager, the experience gained in dismantling the structures will be used when the shutdown Unit 1 and the currently operating Unit 2 are decommissioned.
- In September, work to decommissioning one of the highest hazards at the Sellafield site took a major step forward with the start of desludging activities in the Windscale Pile Fuel Storage Pond. Sludge, in the form of corrosion products and wind-blown material, has been accumulating in the pond since it was commissioned in 1952. The first phase of remediation will see the sludge retrieved from 2 of the original 12 bays within the pond, in which fuel was decanned and exported for processing. Later phases will see the sludge transferred from a holding corral to a new facility currently being constructed adjacent to the pond, for interim storage prior to final treatment.
- Some 1533 tonnes of sodium from the shutdown Prototype Fast Reactor at Dounreay have been turned into salt water in a processing plant built in the reactor's former turbine hall. Small batches of sodium were mixed with larger amounts of aqueous sodium hydroxide and then neutralized with hydrocholoric acid. The resulting salt water was contaminated with cesium, which was removed through ion exchange processes. For each tonne of sodium processed, some 10 tonnes of salt water was returned to the sea. Work on the sodium processing was completed in August.

  The sodium represented the most serious hazard still present at the reactor. The spent fuel had been removed following the plant's shutdown in 1994. Completion of sodium processing means that dismantlement of the plant can soon follow. A few tonnes of sodium residues are still located in the plant's inner circuits and must be removed before dismantlement can begin.
- Nine kilograms of U.S.-origin highly enriched uranium (HEU) research reactor fuel has been shipped back to the United States from Germany; all such material has now been returned from the country. In addition, this year all U.S.-origin HEU fuel was returned from Argentina, Portugal, and Romania. So far, the U.S.-origin HEU fuel return program has involved 45 shipments, totaling 1190 kg, from 27 countries, and 16 of those countries have now returned all U.S.-origin HEU fuel. The fuel assemblies will be stored at the DOE's interim management facility at the Savannah River Site in South Carolina, until final disposition arrangements are made.
- On October 6, Hungary inaugurated the start of operations at its Bataapati low-level and short-lived intermediate-level radioactive waste repository, designed to hold all the LILW from the operation and decommissioning of the Paks nuclear power plant. The small volume of long-lived ILW and the high-level waste will be managed separately. The four-unit Paks plant supplies more than one-third of the country's electricity. At the repository, waste drums will be stacked at a depth of 200–250 meters below the surface inside caverns within the granite bedrock. After filling, the disposal caverns will be back-filled with a combination of clay and concrete with 50–60 percent crushed granite. The facility is designed to make it possible to retrieve the waste packages up until final closure. In the first phase of the project, three pairs of LILW caverns will be constructed. Higher activity waste will be isolated in one particular bedrock block.