

Yucca Mountain Updates

- The U.S. Environmental Protection Agency hopes to issue the final Yucca Mountain million-year radiation protection standard by the end of calendar year 2006. According to Elizabeth Cotsworth, director of the agency's Office of Radiation and Indoor Air, the EPA received some 2550 public comments on the standard (about 2350 of which were the result of mass mailings, she said). The agency is now trying to determine what changes, if any, are needed to the proposed standard.

- The U.S. Department of Energy is hoping to develop target dates sometime this summer for submitting the Yucca Mountain license application to the U.S. Nuclear Regulatory Commission and for the beginning of actual repository operations. The nuclear industry would like the license application to be submitted prior to the start of a new presidential administration in January 2009. As for repository operations, the latest date "on the street" has the repository beginning to accept spent nuclear fuel in the 2020 time frame.

- The administration's Yucca Mountain bill was introduced in Congress in early April. The proposed legislation would lift the legal 70 000 metric ton cap on the repository's disposal capacity, and would allow the U.S. Department of Energy to begin construction on non-nuclear facilities, such as a planned rail spur, prior to U.S. Nuclear Regulatory Commission authorization of repository construction. It would also reclassify the Nuclear Waste Fund as an offsetting collection against appropriations to ensure that adequate funding exists for its intended purpose of licensing and constructing the repository, would exempt material at Yucca Mountain from the Resource Conservation and Recovery Act, which the DOE said would avoid duplicative environmental reviews, and would preclude the state of Nevada from enacting laws to limit the federal government's water use at the site. The bill has provisions to permanently withdraw from public use approximately 147 000 acres of land at and surrounding the repository site. Permanent withdrawal is necessary to meet an NRC licensing requirements. The DOE bill also addresses the waste confidence issue, using the draft bill to declare confidence that the U.S. would have adequate disposal capacity for the nation's commercial spent fuel. This provision would eliminate the need for periodic reviews by the NRC on the issue of waste confidence.

One issue not addressed by the legislation is interim

storage of utility spent fuel. This could be a problem, according to Sen. Pete Domenici (R-N.M.), one of the Senate bill's sponsors, and it is possible that he may attempt to attach language to the bill authorizing the DOE to provide utilities with interim storage for their spent fuel. DOE officials claim to have an "open mind" on the issue, even if it is not addressed in the proposed legislation.

Whether Yucca Mountain should even be used for disposal of spent fuel is another issue not addressed in the bill. However, during a May 16 hearing of the Senate Energy and Natural Resources committee, which Domenici chairs, the senator suggested that disposing of spent fuel is unrealistic. Efforts must be made to reconcile the Yucca Mountain repository and the president's new Global Nuclear Energy Partnership (GNEP) program (which advocates fuel recycling), he said. Domenici added that it

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makes sense to take advantage of the current delays in the Yucca Mountain program to pursue new recycling technologies that will increase the capacity of the mountain, as well as the likelihood of success in licensing the repository.

- The U.S. Department of Energy published a solicitation notice on a DOE web site looking for cask vendors interested in developing a conceptual design for the Yucca Mountain transport/aging/disposal (TAD) canister. The TAD canister concept would eliminate the need for the DOE to do extensive fuel handling or repackaging at the Yucca Mountain facility prior to disposal.

- The federal government will not pursue criminal

charges over allegations of document falsification on water infiltration studies for the proposed Yucca Mountain high-level waste repository. However, the Energy Department's inspector general found that the agency loosened requirements for the repository project to take into account weak scientific practices, rather than fixing the problem. E-mails written by U.S. Geological Survey scientists had suggested that some quality assurance documents associated with Yucca Mountain work had been falsified. The DOE has stated that it is having all the water infiltration data recertified by outside agencies.

- The U.S. Department of Energy is planning improvements to buildings and roads at the site of the proposed Yucca Mountain high-level waste repository. The \$100-million upgrade project involves improvements to underground systems in the eight miles of tunnels at the mountain, including better fire detection and lighting systems; building a new guardhouse at the start of the road to Yucca Mountain; addition of a new or better access road; construction of permanent warehouses to replace temporary structures; improvements to power generation, communications, and cement production facilities; and construction of a fire station that can house a six-person crew. The DOE said some \$45 million in the 2006 budget could go to the planned improvements.

GNEP on the Hill

In late May, the U.S. House of Representatives passed an Energy and Water funding bill that provides \$120 million for the president's Global Nuclear Energy Partnership (GNEP) program, \$130 million below the budget request. The House funding level mandates a "go slower" approach to GNEP in 2007. The U.S. Senate was expected to consider its version of the energy budget in June, and Sen. Pete Domenici (R-N.M.), chairman of the Senate Appropriations subcommittee that controls U.S. Department of Energy spending, has stated that he wants to fund GNEP at the full \$250 million level.

The GNEP program has four major goals: (1) reduce America's dependence on foreign sources of fossil fuels and encourage economic growth; (2) recycle nuclear fuel using new proliferation-resistant technologies to recover more energy and reduce waste; (3) encourage prosperity, growth, and clean development around the world; and (4) utilize the latest technologies to reduce the risk of nuclear proliferation worldwide. The GNEP strategy includes

building a new generation of nuclear power plants in the United States, developing and deploying new nuclear recycling technologies, working to effectively manage and eventually store spent nuclear fuel in the United States, and designing advanced burner reactors that would produce energy from recycled nuclear fuel.

Under GNEP, commercial spent nuclear fuel would be recycled so that transuranic elements would be consumed, not disposed of as waste. Residual waste fission products would be reconfigured for disposal as a geologic repository. Because the amount of these wastes would be significantly reduced from the recycling process, the United States might need only one high-level waste repository, and, therefore, the Yucca Mountain repository might be able to hold all the nation's HLW. Under current law, the DOE is already looking at potential sites for a second repository.

Project, D&D Updates

- The United Kingdom's University of Central Lancashire has launched the U.K.'s first Foundation Degree in Nuclear Decommissioning. The first students will start courses this September. They will be taught near the Sellafield nuclear complex in Cumbria at the Westlakes Research Institute on the Westlakes Science and Technology Park near Whitehaven and Lakes College West Cumbria at Lillyhall. Scotland offers a degree in nuclear decommissioning, but this represents the country's first foundation degree.

- The Fast Flux Test Facility on the Hanford site has been designated a National Nuclear Historic Landmark by the American Nuclear Society. FFTF was built to develop fast breeder reactor technology, but when Congress canceled the nation's commercial breeder reactor project at Clinch River, the facility no longer had a mission. It is currently being decommissioned.

- Fernald completed its shipment campaign of Silos 1 and 2 by-product material in late May. For decades, the raw ore in the silos posed one of the greatest sources of direct radiation to Fernald workers and has long been a concern for plant neighbors. The material, blended with flyash and cement and sealed into 0.5-inch-thick steel canisters, has been shipped to the Waste Control Specialists facility in Andrews County, Tex., for storage. The 3776 canisters were delivered in 1888 round trips, and drivers logged more than 5 million miles during the shipping campaign.

In April, Fernald completed the waste removal, packaging, and shipping campaign for 5100 cubic yards of thorium-bearing radioactive waste residues from Silo 3. The powdery material was mixed with an additive to reduce the risk of dispersion and loaded into a total of 2297 soft-sided packages, which were then loaded into sealand containers at the rate of four bags per container. The material was transported by truck to the Energy Solutions

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disposal site in Clive, Utah, for disposal. The 12-month shipping campaign included 285 round trips covering more than one million miles.

An article on the Fernald closure project can be found in this issue beginning on page 16.

- In April, the Duratek Inc./Tri Vis team completed a turnkey dry spent fuel storage cask loading campaign at the Tennessee Valley Authority's Sequoyah nuclear power station. The project team completed loading of 5 Hi-STORM casks, achieving an average loading schedule of seven days per cask. The team was scheduled to begin another loading campaign at Omaha Public Power District's Fort Calhoun plant, where 10 NUHOMS systems are being loaded in that plant's initial loading campaign.
- In late March, CH2M Hill Hanford Group announced that it had completed the retrieval of radioactive and chem-

ical waste from a fourth underground storage tank at the U.S. Department of Energy's Hanford site. The tank, C-201, is one of four 55 000-gallon tanks located at the C Farm. Waste retrieval began in October 2005, at which time the tank held 860 gallons of solid material. CH2M Hill is working to transfer waste from single-shell tanks to safer double-shell tanks where it will be stored until it is prepared for disposal. Waste retrieval is currently under way on three additional single-shell tanks at Hanford, the company said.

- A federal judge ruled in late May that the U.S. Department of Energy is required under a 1995 cleanup agreement between the agency and the state of Idaho to remove all buried transuranic waste at the Idaho National Laboratory by no later than 2018. The DOE had contended that the agreement referred only to TRU waste in above-ground storage facilities at the lab, and did not cover plutonium and other wastes buried at the Subsurface Disposal Area. The DOE maintains that removal of some of the buried waste at the laboratory could pose dangers to cleanup workers and that it should not be removed.

- Officials at Oak Ridge National Laboratory announced the establishment of a technology park designed to attract private companies that are working with scientists at the Tennessee laboratory or commercializing technologies developed at the lab. The Oak Ridge Science and Technology Park will be located on land provided by the U.S. Department of Energy that is no longer needed for lab operations. Oak Ridge officials say it is the first private technology park located on the campus of a national laboratory. The DOE property has been transferred to a non-profit group, the Community Reuse Organization of East Tennessee. The first tenant for the park, Pro2Serve Professional Project Services Inc., plans to build a 100 000-square-foot facility to serve as its corporate headquarters and National Security Engineering Center.

GAO: Slow Down on the Hanford Vit Plant

Delaying construction on key parts of the Hanford site's Waste Treatment Plant until design is complete could save money by reducing false starts and delays, according to a Government Accountability Office report. The GAO report, GAO-06-602T, titled "Hanford Waste Treatment

Plant: Contractor and DOE Management Problems Have Led to Higher Costs, Construction Delays, and Safety Concerns," was released on April 6, 2006.

The GAO found that since the waste treatment plant construction contract was awarded in 2000, the project's

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estimated cost has increased more than 150 percent to about \$11 billion, and the completion date has been extended from 2011 to 2017 or later. There are three main causes for the increases in the project's cost and completion date, the GAO said: (1) the contractor's performance shortcomings in developing project estimates and implementing nuclear safety requirements, (2) DOE management problems, including inadequate oversight of the contractor's performance, and (3) technical challenges that have been more difficult than expected to address. To address the causes of the cost and schedule increases and regain management control of the project, the DOE and Bechtel have taken steps to develop a more reliable cost and schedule baseline; slow down or stop construction activities on some of the facilities to allow time to address technical and safety problems and to advance design activities farther ahead of construction activities; and strengthen both project management and project oversight activities. Despite these actions, the GAO said, it has continuing concerns about the current strategy for going forward on the project. The main concerns include: (1) the continued use of a fast-track, design-build approach for the remaining work on the construction project, (2) the historical unreliability of cost and schedule estimates, and (3) inadequate incentives and management controls for

ensuring effective project management and oversight.

GAO recommended that the DOE (1) consider the feasibility of completing 90 percent of facility design or facility component design before restarting construction; (2) ensure that the revised project baseline fully reflects remaining uncertainties; and (3) improve management controls. The DOE generally agreed, the report said, but was concerned about the costs of delaying construction to complete design activities.

The full report can be found at www.gao.gov.

International Briefs

- Japan's first commercial-scale reprocessing plant at Rokkasho began test operations in late March. Japan Nuclear Fuel Ltd. plans 17 months of tests at the facility, which has a design capacity of processing 800 metric tons of spent fuel annually.
- The U.K.'s Nuclear Installations Inspectorate has consented to the decommissioning of the Sizewell A Magnox plant. The plant is scheduled to close in December of this year. After that, the next step will be plant defueling, which is expected to be completed in 2009. Current plans are for initial decommissioning work, including demolition of the turbine hall and ancillary buildings, to be completed by 2017. Final site clearance will be completed by 2110, British Nuclear Group said.
- The U.K. Nuclear Decommissioning Authority is launching an international search for contractors to enter the competition to manage the Drigg low-level waste disposal facility. The Drigg contract, valued at approximately £200 (around \$370 million) for an initial five years, will be awarded by late 2007. The NDA said options associated with the contract could add value to the contract terms. The contract would also include the design and construction of an additional LLW vault at the site, together with additional infrastructure, including rail facilities.
- Electricité de France has received a license to decommission and complete dismantlement of the heavy-water reactor at Brennilis. The 70-MW reactor, known as the EL-4, began operation in December 1966 and was shut down permanently in July 1985. The plant is half-owned by the Commissariat à l'Energie Atomique. Dismantlement is expected to be complete in five years.

● The French Senate voted in late May to adopt a nuclear waste strategy bill aimed at getting the construction of a deep geologic repository under way in 2015, with repository operations scheduled to start in 2025. The Senate bill resembles but is not identical to the version passed during its first reading by the National Assembly in April. This means the Assembly will have to consider the Senate ver-

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sion of the bill in a second reading before the measure can be passed into law. The Assembly is expected to debate and vote on the bill before the end of the summer session.

● The second review meeting of the International Atomic Energy Agency's Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was held in Vienna May 15–24. There are now 42 states party to the convention, which entered into force in 2001, including, the IAEA said, almost all countries with significant nuclear programs. The Joint Convention applies to spent fuel and radioactive waste resulting from civilian nuclear reactors and applications and to spent fuel and radioactive waste from military or defense programs if and when such materials are transferred permanently to and managed within exclusively civilian programs, or when declared as spent fuel or radioactive waste for the purpose of the Convention. The Convention also applies to planned and controlled releases into the environment of liquid or gaseous radioactive materials from regulated nuclear facilities. Countries ratifying the Convention most recently include Brazil, Russia, and China, which ratified the Convention only days before the start of the review meeting, and was not formally a party to it. Issues discussed at the review meeting includ-

ed national strategic planning, stakeholder involvement in waste management decisions (most notably, in the siting of waste disposal facilities), and management of disused sealed sources.

● The Canadian government has announced a five-year, \$520 million (Canadian) program to clean up legacy wastes from research and development on nuclear power and medical isotopes and early military activities. The program will cover cleanup of Atomic Energy of Canada Limited's contaminated lands and radioactive wastes, and decommissioning old infrastructure that the government is responsible for. All waste and decommissioning liabilities for nuclear utilities remain the responsibility of those bodies and are not included.

● The first stage of the stabilization of the Chernobyl-4 sarcophagus has been completed, according to Russia's Atomstroyexport (ASE). This consisted of reinforcing the western and eastern supports of the large beam that supports the sarcophagus roof. This first-stage work has improved the facility's seismic stability, the Chernobyl press office stated. According to ASE, the radiation dose rate during the work ranged between 0.5 and 1.5 rad/hour. Personnel were trained on a model facility, and a protective bridge-shaped structure was raised over the most radioactive structures inside the sarcophagus.

● In late April, the United Kingdom's government-appointed Committee on Radioactive Waste Management (Corwm) recommended that the best solution for disposal of the country's long-lived and more highly active radioactive waste is deep disposal several hundred meters underground. This should be preceded by "robust interim storage" until such a repository can be opened, the committee said. The interim storage period should be at least 100 years. Corwm was established in 2003 to recommend to the government the best, publicly acceptable solution for managing the U.K.'s high-activity waste, which cannot be disposed of at the low-level waste disposal facility at Drigg. The committee's members were selected by government ministers from a wide variety of backgrounds, including one member who is a co-founder of Friends of the Earth and Greenpeace. The recommendations are part of a draft package of recommendations that will be finalized in July and delivered to the government. Most of the waste that the U.K. will eventually have to deal with is intermediate-level waste arising from decommissioning the country's many current nuclear facilities. ■