

## **NRC to NAS Waste Board: At-Reactor Spent Fuel Storage Is Safe**

The storage of spent nuclear fuel at commercial nuclear power plants is safe and secure, the U.S. Nuclear Regulatory Commission reported in December to the National Academy of Sciences (NAS) Board on Radioactive Waste Management. NRC staffers, using sophisticated computer models, are reassessing the vulnerability of at-reactor spent fuel storage. The findings so far indicate that both spent fuel pools and dry casks are “robust,” the agency reported. Representatives from the Nuclear Energy Institute and the General Accounting Office also reported on at-reactor storage safety during the December 3 session.

The NAS is forming a 10-member panel to conduct a six-month study of the safety and security of at-reactor spent fuel storage, as requested by the House of Representatives homeland security and energy appropriations subcommittees. The issue has been repeatedly assessed following the terrorist attacks in New York and Washington, D.C., on September 11, 2001. A study released in 2002 by the Electric Power Research Institute reported that it was unlikely that a terrorist pilot could hit nuclear plant structures, and that a spent fuel pool, housed in a separate building from the containment, and storage casks on an Independent Spent Fuel Storage Installation pad would be small and difficult-to-hit targets.

## **PFS Wins Round Before the ASLB on Rail Line**

At the end of December, the Atomic Safety and Licensing Board ruled in favor of Private Fuel Storage, the private concern attempting to construct a spent fuel storage installation in the Utah desert, on an issue raised by the Southern Utah Wilderness Alliance (SUWA) regarding the proposed route of a rail line to be built to the PFS facility in Skull Valley. SUWA had challenged the proposed rail route, claiming that it could interfere with potential designation of wilderness areas in the North Cedar Mountains. The ASLB found that the routing of the rail line “does not compromise any objectively cognizable wilderness values,” and that alternative routes suggested would be worse in terms of creating adverse environmental impacts.

This ruling was the latest in a series that the ASLB must make regarding issues that were brought before the board in hearings in 2000 and 2002. The ASLB has ruled in favor of PFS on all but one issue: potential hazards associated with a hypothetical military aircraft crash at the site. That issue will be explored further in additional hearings before the Board this spring.

## **Grossenbacher Withdraws NRC Nomination**

Former Navy Vice Admiral John Grossenbacher has requested that his nomination to the U.S. Nuclear Regulatory Commission be withdrawn, just as President George Bush had been preparing to name him to the agency in a recess appointment. Unclear at press time was what will happen to the NRC nomination of Gregory Jaczko, the science adviser of Sen. Harry Reid (D-Nev.), which the White House had promised in exchange for Reid’s allowing Senate votes to proceed on several dozen Bush nominees, including Grossenbacher. The nuclear industry has been lobbying against the Jaczko nomination because it believes that if he is appointed to the Commission, he will attempt to scuttle the licensing of the high-level waste repository at Yucca Mountain.

## **GAO: NRC Needs Better Oversight of Power Reactor Decommissioning Funds**

In a December report, “NRC Needs More Effective Analysis to Ensure Accumulation of Funds to Decommission Nuclear Power Plants” (GAO-04-32), the General Accounting Office found good news and bad news concerning nuclear plant decommissioning funds.

On the good side, the GAO (the investigative arm of Congress) found that the combined value of the nuclear power plant owners’ decommissioning fund accounts in 2000—about \$26.9 billion—was about 47 percent greater than needed at that point to ensure that sufficient funds will be available to cover the approximately \$33 billion in estimated decommissioning costs when the plants are permanently shutdown. This value contrasts with GAO’s prior finding that 1997 account balances were collectively 3 percent below what was needed.

These numbers were misleading, however, the GAO warned. The agency found that 33 owners with ownership interests in a total of 42 plants had accumulated fewer funds than needed through 2000 to be on track to pay for eventual decommissioning. It also found that 20 owners with ownership interests in 31 plants recently contributed less to their trust funds than is estimated they need to put them on track to meet their decommissioning obligations.

The report was critical of the U.S. Nuclear Regulatory Commission’s oversight of decommissioning fund accruals. The GAO noted that in reviewing the 2001 reports, the NRC reported that all owners appear to be on track to have sufficient funds for decommissioning. In reaching this conclusion, the NRC relied on the owners’ future plans for fully funding their decommissioning obligations. However, the GAO said, based on the owners’ recent ac-

tual contributions, and using a different method, the GAO found that several owners could be at risk of not meeting their financial obligations for decommissioning. In addition, the report stated, for plants with more than one owner, the NRC did not separately assess the status of each co-owner's trust funds against each co-owner's contractual obligation to fund decommissioning. Instead, the NRC assessed whether the combined value of the trust funds for the plant as a whole was reasonable.

The GAO recommended that the NRC develop an effective method for determining whether owners are accumulating decommissioning funds at sufficient rates and also establish criteria for taking action when it determined that an owner is not accumulating sufficient funds.

The NRC, for its part, disagreed with the GAO findings, stating that its methods were already effective and that it is better to deal with unacceptable levels of financial assurance on a case-by-case basis.

The report was prepared at the request of Rep. Edward J. Markey (D-Mass.), who was concerned that if plant owners do not have sufficient decommissioning funds, taxpayers will be stuck with the decommissioning bill. The full report can be found on the Internet at [www.gao.gov](http://www.gao.gov).

### Project Progress

● In 2003, workers at the Fernald site pumped and treated 2.4 billion gallons of water, loaded 29 trains with waste pit cleanup material totaling 191 000 tons, containerized more than 6000 cubic yards of waste, excavated and screened 178 000 cubic yards of clay, dismantled 32 buildings, and placed more than 284 000 cubic yards of waste in the site's On-Site Disposal Facility (OSDF). As a press release from the site noted, if you combined the waste removed from the pits, containerized waste shipped offsite, and waste placed in the OSDF in 2003, you'd raise the playing field at Paul Brown Stadium 70 yards. The cleanup project remains on target for completion by December 2006.

● On December 1, after a two-year effort, Southern California Edison received permission from the U.S. Department of Transportation to ship the San Onofre-1 reactor vessel from southern California around the tip of South America to the Barnwell low-level waste disposal site. However, the company announced, delays in finalizing satisfactory arrangements for the shipment mean that the company will miss the window of opportunity for shipment to Barnwell. Instead, the company will continue to store the vessel at its current location "until such time as appropriate arrangement are made for its permanent disposal," SCE said.

● Connecticut Yankee's reactor pressure vessel was shipped to Barnwell in December, arriving at the LLW disposal facility on Jan. 6 after a 1000-mile journey by barge and land transporter from Haddam, Conn., to the South Carolina site.

The vessel transport was a piece of good news for Connecticut Yankee Atomic Power Co. (CYAPC), which has been reported to be preparing to raise its estimate of the cost to decommission the plant from \$550 million to \$820 million, a \$270 million increase. CYAPC attributes the higher costs to the decision made last summer to terminate Bechtel Power Corp.'s decommissioning contract. Delays in the removal of the pressure vessel in turn delayed other decontamination work at the site. CYAPC and Bechtel Power are now meeting each other in Middlesex County Superior Court, arguing over which company is liable for the delays and increased costs.

● The Idaho National Engineering and Environmental Laboratory hopes to eliminate its backlog of mixed low-level waste by September 2004, two years ahead of schedule. For decades, the containerized hazardous and mixed waste had been stored at the site for lack of an offsite treatment and disposal facility. In 2003, INEEL treated and disposed of more than 900 cubic meters of the waste, which includes such items as protective clothing for workers, tools, equipment, and other material that has been exposed to radioactive and hazardous contaminants. With more than half of

the backlog now removed, only about 1150 cubic meters of the waste remains to be treated and disposed of.

Also at INEEL, excavation began on Dec. 12 at the facility's Pit 9, with the removal of clean topsoil. Retrieval of contaminated waste began in January. Pit 9 is located in the Subsurface Disposal Area, a 97-acre site in the western section of the lab's Radioactive Waste Management Complex. The one-acre pit received waste from the Rocky Flats Plant near Golden, Colo., between 1967 and 1969.

● Last year, Big Rock Point shipped its steam generator to Barnwell; shipped its steam drum to Enviro-care of Utah; loaded 441 spent fuel

### Correction

Due to a proofreading error, a table was inadvertently left out of the article, "Saving \$\$ at SONGS with Disposable Media Filters," which appeared on pp. 10-13 in the November/December 2003 issue of the magazine. The table appears below. *Radwaste Solutions* regrets the error.

#### Physical Details of the DMF

- Design Differential Pressure - 75 psid
- Design Temp - 250°F
- Design Flow rate - Up to 250 gpm
- Filter Diameter - 6 in.
- Overall Length - Up to 27 in. (longer lengths possible but not standard)
- Micron Ratings - 0.1, 0.2, 0.45, 1.0, 2.0, 6.0, 10, 20, 40
- Reverse Flow Differential Pressure - 75 psid
- Adapter Materials - 300 series stainless steel
- Seal Material - Silicon RTV (Chemistry information available)

bundles into seven dry storage casks, completing the dry fuel storage project; declared the onsite dry fuel storage facility operational; emptied and drained the spent fuel pool; shipped more than seven million pounds of clean building material to a local industrial landfill; and submitted its license termination plan to the U.S. Nuclear Regulatory Commission.

### Yucca Mountain in the News

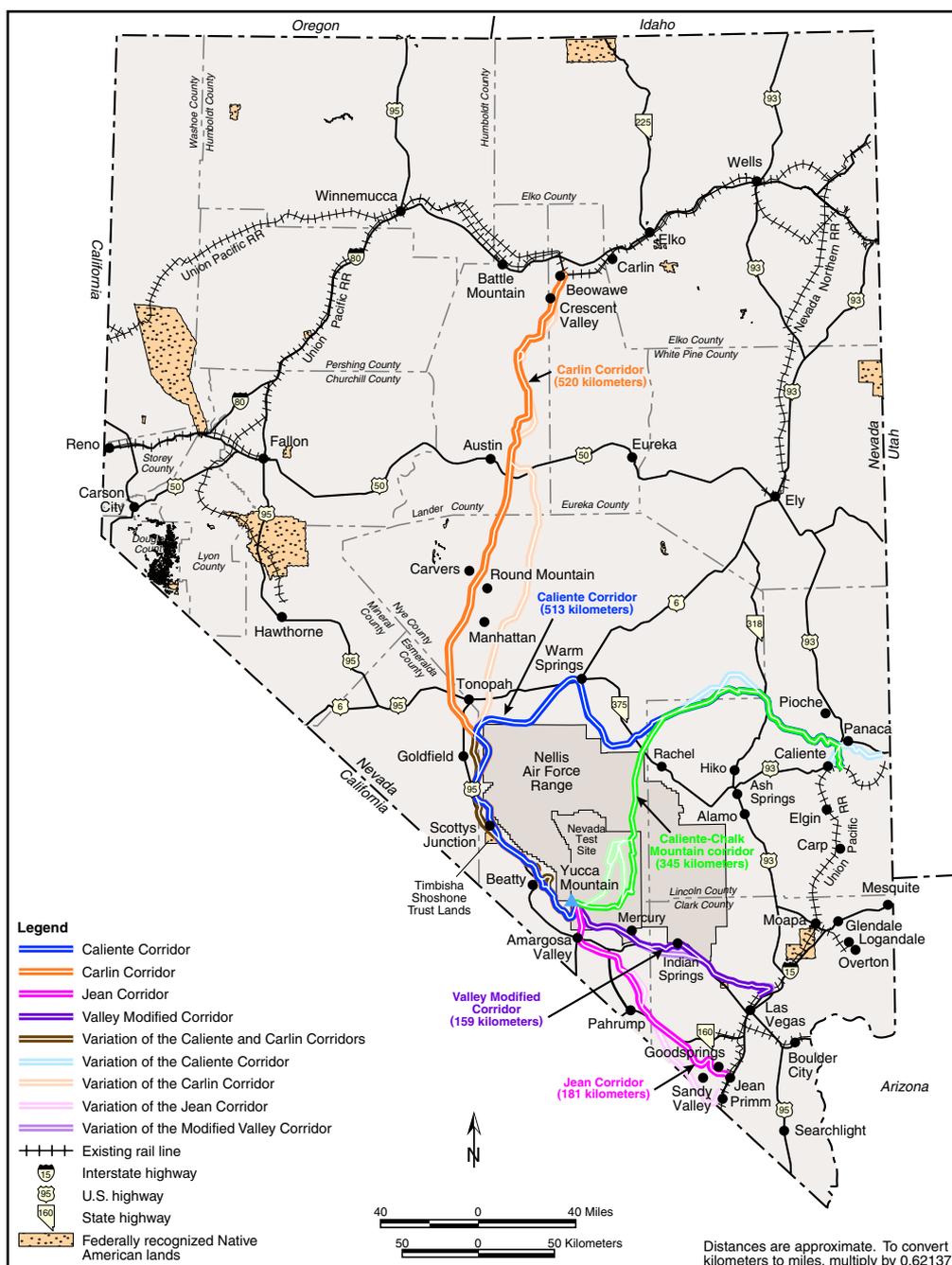
● In late November, the U.S. Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM) issued its Strategic Plan for the transportation of spent fuel to the Yucca Mountain repository in Nevada. The plan describes the process the DOE will use to work cooperatively with state, federally recognized tribes, local government, utilities, the transportation industry, vendors, and other interested parties to refine the transportation system as it is developed. The full text of the plan appears in this issue beginning on page 18.

In December, OCRWM selected the Caliente rail corridor as its preference for construction of a rail line to serve the Yucca Mountain high-level waste repository in Nevada. The Carlin corridor was identified as the second choice.

The Caliente corridor was one of five studied by the DOE in its final Environmental Impact Statement for the Yucca Mountain project (see map). Three of the potential corridors—Caliente, Caliente-Chalk Mountain, and Carlin—approach Yucca Mountain from north of the Nellis Air Force Range. Two southern corridors—Jean and Valley-Modified—would run through the Las Vegas Valley. In choosing the more remote Caliente and Carlin corridors, the DOE cited their remote location and the reduced likelihood of land use conflicts, stating that such factors appear to best assure the safe, secure, and timely transport of materials to Yucca Mountain. The DOE also

avoids an additional run-in with the state of Nevada, which has passed a (probably unconstitutional) law prohibiting waste transport through the Las Vegas Valley.

● Oral arguments in Nevada's legal challenge to the Yucca Mountain repository were held January 14 before a three-judge panel at the U.S. Court of Appeals for the District of Columbia Circuit, with attorneys for the state of Nevada and environmental groups stating that federal agencies ignored science and law in choosing the Yucca Mountain site for building a high-level waste and spent fuel repository. Countering those arguments, federal attorneys argued that the decision was based on sound science and reasoning.



The 13 lawsuits aimed at stopping the project have been consolidated into three: that the U.S. Environmental Protection Agency's radiation standards are too weak to protect the public, that the U.S. Nuclear Regulatory Commission should demand that the mountain's natural geology be able to contain the nuclear material without the use of engineered barriers, and that the DOE used flawed criteria in selecting the site, violating Nevada's constitutional rights.

The *Washington Post* reported that two of the three judges appeared to question some of the decisions made by the EPA on radiation standards, but appeared to favor the government on the constitutional argument.

Nevada officials consider the court case one of their last hopes in stopping the project. The three-judge panel is expected to issue a decision in late spring or summer, but that decision will most likely be appealed to a higher court, no matter which side wins.

- The Bush administration reportedly will seek nearly \$900 million for the U.S. Department of Energy's waste program in fiscal 2005. The request, included in the fiscal 2005 budget blueprint that the administration was slated to send to Capitol Hill on Feb. 2, marks the first of five years of high spending as the DOE repository project makes its way through design, licensing, and construction activities. Although the request will be the highest amount yet sought for the DOE waste program—the program was authorized to spend \$580 million this fiscal year—it falls below earlier budget projections that the program's funding requirements would top \$1 billion a year for five years, beginning in fiscal 2005.

- The U.S. Department of Energy planned to meet with individual cask vendors in February to get recommendations on the type of casks that will be needed to move spent fuel and high-level waste to the Yucca Mountain repository. A request for proposals from cask vendors was expected to be issued at a later date. Casks for such materials as nonstandard spent fuel and HLW will have to be developed and then certified by the U.S. Nuclear Regulatory Commission, and the industry's move toward higher fuel burnup is pushing the envelope on current cask designs.

- OCRWM has announced the initiation of a voluntary Silicosis Screening Program for current and former workers at the Yucca Mountain project. Specifically, the program is being offered, free of charge, to project employees who were involved in tunneling and underground operations, as well as the setup of experiments in the Exploratory Studies Facility from 1992 to the present.

Silica is one of the minerals that naturally exist in the desert soils and rocks at Yucca Mountain. Silica can become airborne during dust-producing activities such as tunnel boring operations. If inhaled, silica can collect in the respiratory system and, with long-term exposure, can cause a chronic, progressive lung disease called silicosis, the most visible symptoms of which are coughing and shortness of breath.

- The Nuclear Waste Technical Review Board released its study of the proposed Yucca Mountain repository design on November 25, as promised in an October 21 letter from

the Board critical of the DOE's repository design. That letter drew strong objections from Margaret Chu, director of OCWRM (see "Headlines," *Radwaste Solutions*, Jan./Feb. 2004, p. 4). In releasing the study, the Board reiterated its concerns about repository design, including the contention that "microenvironments" in crevices on the spent fuel containers would result in corrosion that could begin in the first 1000 years of repository operations, when heat from radioactive decay is at its highest, likely resulting in "perforation of waste packages."

## DOE Default Hurt Reactor Selling Prices, Former Owners Allege

The U.S. Department of Energy is already facing 29 utility claims that seek more than \$5.7 billion in damages as compensation for their having to extend onsite storage of spent fuel because of the DOE's failure to take ownership of the fuel in 1998, as mandated in the Nuclear Waste Policy Act amendments. In January, five former owners of nine nuclear power plants filed additional suits, claiming that the DOE's breach of contracts reduced the value of the plants they were selling and therefore diminished the amount of money they received for the plants.

The five companies filing the complaint in the U.S. Court of Federal Claims on January 13 include: Atlantic City Electric Co., a former minority owner in the Salem, Peach Bottom, and Hope Creek plants; Boston Edison, former owner/operator of the Pilgrim plant; Canal Electric, a former minority owner in Seabrook; Consolidated Edison, former owner/operator of Indian Point; and Delmarva Power & Light Co., a minority shareholder in Salem and Peach Bottom. The claims did not specify damages sought.

These lawsuits were expected to be followed by additional ones. The statute of limitations for filing claims over the DOE's failure to begin disposing of spent fuel by the 1998 contract date was due to expire January 31.

## International Updates

- After weeks of protests, the Italian government removed the town of Scanzano Jonico from a decree establishing a national nuclear waste disposal site, and instead will conduct a year-long site search. The government had designated the town, near a salt deposit in the southern province of Basilicata, in an emergency decree issued in mid-November, outlining an urgent project to gather up the country's widely scattered medium- and high-level waste, including spent fuel from the country's long-closed power reactors. The government noted, however, that the town remains under consideration as a site for the waste repository, along with any other sites that may be proposed during the year-long site study.

- Ukraine plans to construct a centralized spent fuel storage facility for the South Ukraine, Rovno, and Khmelnit-

ski nuclear power plants. No site has yet been designated, but one probable location is in the 30-kilometer zone around the Chernobyl nuclear plant. Until now, Ukraine had sent its spent fuel back to Russia.

Also in Ukraine, the spent fuel storage facility being planned for the Chernobyl RBMK fuel has been delayed, and is now scheduled to begin operation some time in 2007. Mistakes in the design of the facility, which failed to take into account the number of damaged fuel assemblies, allegedly contributed to the delay. The fuel is currently stored in the shutdown plants' spent fuel pools, as well as in the core of Units 1 and 3.

- The United Kingdom's Bradwell nuclear station in Essex has received approval from the U.K. Nuclear Installations Inspectorate to begin decommissioning. The plant will be the fifth magnox station in the country to get decommissioning approval. It closed in March 2002 after a 40-year operating life. Five magnox stations are still operating in the United Kingdom, but all are due to be closed by the end of 2009.

- Japan has begun an open solicitation process to find a site for a deep geological repository, and hopes to produce a short list of sites by 2007. Studies of the most promising sites will begin around 2012, and site selection should take

place by 2025. Repository operation is expected by about 2035. The 3 trillion yen (\$28 billion) cost will be covered by a surtax on nuclear-generated electricity of 0.2 yen/kWh.

- By early December, some 600 metric tons of very low-level nuclear waste had been sent to France's new very low-level waste disposal center at Morvilliers since its commercial startup in October. The center should be fully operational in the first half of this year, once compacting and solidification facilities have been completed. The first deliveries to the site came from decommissioning projects at the Brennilis heavy water reactor and the St. Laurent-des-Eaux gas-cooled reactor. The site is capable of disposing of about 750 000 metric tons of slightly radioactive waste over a 30-year period, most expected to come from nuclear plant decommissioning.

- The European Commission plans to fund a pilot study examining the feasibility of regional radioactive waste repositories in Europe. The study will be managed by Slovakia's DECOM organization and by Arius, which is based in Switzerland but which has membership from organizations in several countries. The initial phase of the study will look at technical and legal requirements for a regional repository and will involve about a dozen European countries. ■