Appeals Court Rejects Yucca Mountain Suit; Plaintiffs Sue NRC

On July 1, a three-judge panel of the U.S. Court of Appeals for the District of Columbia Circuit ruled that the lawsuit filed by the states of Washington and South Carolina and by other petitioners to keep the Yucca Mountain project alive was premature, given that the U.S. Nuclear Regulatory Commission has not yet decided whether the U.S. Department of Energy can withdraw its license application for the Yucca Mountain high-level radioactive waste/spent nuclear fuel repository. In the ruling, the court said that there is "a lack of finality and ripeness until the commission either acts on the DOE's motion to withdraw or rules on the license application."

Congress selected the Yucca Mountain site in Nevada for the nation's HLW repository in 1987 in the Nuclear Waste Policy Amendments Act. Since that time, the state of Nevada has been waging a focused battle against the project. In 2008, the DOE submitted a license application for the facility with the NRC. In 2009, at the beginning of the Obama administration, Nevada got some high-level support from the new president, who announced that the project was, in his opinion, unsafe, and that a new plan for the disposal of waste and spent fuel should be developed.

In March 2010, the DOE filed a motion with the NRC to withdraw the license application "with prejudice," meaning that it could not be resubmitted by a subsequent administration. But a licensing board at the NRC rejected that attempt, saying that the DOE did not have the authority to withdraw the license application, because only Congress could decide whether or not to proceed with the repository project. Since that time, the five-member regulatory commission has been expected to rule on the licensing board's opinion, but as of this writing, has not done so.

To that end, in late July, the original plaintiffs in the lawsuit—the states of Washington and South Carolina, plus three Washington residents—have joined with the National Association of Regulatory Utility Commissioners and Nye County, Nevada (where Yucca Mountain is located) and have filed suit against the NRC, asking the U.S. Court of Appeals to force the agency to resume consideration of the license application and to issue a decision on whether the DOE can withdraw the application.

● In related news, Aby Mohseni, acting head of high-level waste repository safety at the U.S. Nuclear Regulatory Commission, in testimony before Congress in late June, charged that NRC Chairman Gregory Jaczko and other senior officials have allowed politics to influence the staff's scientific work. "Apparently, the NRC's senior leadership is ineffective in upholding the integrity of this agency," Mohseni said. "This is not where an independent safety organization should be."

NRC Chairman Jaczko is a former aide to Senate Majority Leader Harry Reid (D-Nev.), one of the Yucca Mountain project's leading opponents. Since his appointment as commission chair in early 2009, Jaczko has made a series of decisions that have come under attack from congressional Republicans, his own scientific staff, and the agency's Inspector General (IG). An IG report found that Jaczko had acted within his authority to halt the agency's work on the Yucca Mountain license application review and make other related decisions and that he had broken no laws, but that he was less than forthcoming with the other commissioners in an effort to impose his decisions on the issue.

Mohseni has worked for the NRC since 1990. Describing the changes at the agency since Jackzo became chairman, he said: "We were unprepared for the political pressures and manipulation of our scientific and licensing processes that would come with the appointment of Chairman Jacko in 2009." Such manipulation, he continued, is an assault on the agency's congressionally mandated mission.

Blue Ribbon Commission, ANS, GAO Release Reports

In late July, the Blue Ribbon Commission on America's Nuclear Future issued its draft report on what the na-

tion should do with its high-level radioactive waste and spent nuclear fuel, now that the Yucca Mountain project has been canceled by the current administration.

The commission's 192-page draft report can be found at www.brc.gov. The full Executive Summary of the draft report can be found in this issue on pages 46–55.

Comments on the report will be accepted until October 31, 2011, by:

Timothy A. Frazier
Designated Federal Officer
Blue Ribbon Commission
on America's Nuclear Future
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, D.C. 20585

Comments can also be e-mailed to brc@nuclear.energy.gov.

● Also in July, the American Nuclear Society released the Report of the American Nuclear Society President's Special Committee on Used Nuclear Fuel Management Options.

In early 2010, ANS President Tom Sanders formed the ANS President's Special Committee on Used Nuclear Fuel Management Options to explore the options for managing used nuclear fuel (UNF).

The committee's charge was to prepare a comprehensive report for citizens who want to understand the issue or participate in the discussion and for policy makers who must choose a path forward. Such a report would describe currently feasible UNF management options and explore the advantages and disadvantages of each. Environmental, economic, and social factors as well as proliferation risk would be considered. The time frame for the study would be 2010 through the end of the 21st century.

The resulting 64-page report can be found at http://www.new.ans.org/pi/resources/reports/docs/ans-unf-report.pdf. The Executive Summary of the report can be found in this issue on pages 56–58.

● In June, the U.S. Government Accountability Office (GAO) released GAO-11-563, "Oversight of Underground Piping Systems Commensurate with Risk, but Proactive Measures Could Help Address Future Leaks." The report addresses groundwater contamination at nuclear power plant sites that may have been caused by leaking underground piping systems.

The GAO was asked to (1) determine experts' opinions on the impacts, if any, of underground piping system leaks on public health and the environment; (2) assess U.S. Nuclear Regulatory Commission requirements of licensees for inspecting these systems and monitoring and reporting on leaks; (3) identify actions the nuclear power industry, licensees, and the NRC have taken in response to leaks; and (4) identify additional NRC requirements, if any, that key stakeholders think could help prevent, detect, and disclose leaks. The GAO convened expert discussion groups through the National Academy of Sciences and asked experts to review three case studies, analyzed documents, visited seven plant sites and two NRC regional offices, and interviewed stakeholders.

The GAO noted that "while experts in our public health discussion group generally agreed that radioactive leaks at the three nuclear power plants in our case studies of actual events had no discernible impact on the public's health, these experts noted that additional information could enhance the identification of the leaks and the characterization of their impacts. The experts . . . concluded that environmental recourses beyond the plant site have not been impacted discernibly, that but onsite contamination could affect plant decommissioning; for example, the licensee may have to conduct costly remediation to meet NRC regulations for unrestricted release of the site. Experts also identified the need for licensees to transparently report monitoring data and for licensees' groundwater monitoring programs to be independently reviewed."

NRC inspection requirements, the report continued, focus on ensuring the functionality of underground piping systems that are essential for both the safe operation and the shutdown of plants, rather than providing information about the condition of the underground piping systems. In addition, the NRC's groundwater monitor-

ing requirements generally focus on monitoring offsite locations, where a member of the public could be exposed to radiation, but not on onsite groundwater monitoring, which can improve the likelihood that leaks will be detected before they migrate offsite.

The nuclear power industry has implemented two voluntary initiatives to increase public confidence in plant safety, the report noted. The first initiative was intended to improve onsite groundwater monitoring to promptly detect leaks. The second was intended to provide reasonable assurance of underground piping systems' structural and leak-tight integrity. Based on the low risk posed by spills to date, the NRC has determined that no further regulations are needed at this time, but has committed to such actions as gathering information on underground piping leak trends and reviewing codes and standards for underground piping.

The GAO recommended that the NRC periodically assess the effectiveness of the industry groundwater initiatives and determine whether structural integrity tests should be included in licensee inspection requirements, when they become feasible, based on industry research.

Four Utilities Receive Settlements in DOE Spent Fuel Storage Dispute

In July, four more nuclear utilities joined the growing list of companies being awarded payments from the federal government to cover the cost of spent fuel storage. The awards have resulted from the failure of the U.S. Department of Energy to live up to contractual agreements with nuclear utilities to begin taking possession of their spent fuel in January 1998. Delays in the Yucca Mountain repository project, and now its shutdown, have prevented the DOE from living up to its end of the contract. Nuclear utilities, in turn, have been filing lawsuits against the DOE and have been receiving compensation for the costs of continuing to store their spent fuel.

Xcel Energy, owner of the Prairie Island and Monticello nuclear power plants, was awarded $100 million to cover spent fuel storage costs incurred between 1998 and 2008, and an additional $100 million to cover the costs incurred between 2009 and 2013. The settlement does not address costs for spent fuel storage after 2013, and these costs could become the subject of future litigation, the utility said. The money will be returned to utility customers.

Nebraska Public Power District was awarded an initial payment of $60.5 million to cover some of its spent fuel storage costs at the Cooper nuclear power plant through 2009. Costs for spent fuel storage needs between 2010 and 2013 will be submitted annually to the DOE and settlements payments "will be determined accordingly," the utility said. At least part of the payment will be used to buy fuel for the plant, a utility spokesman said.

Energy Northwest was awarded roughly $48.7 million for costs incurred in constructing and licensing a spent fuel storage facility for the Columbia nuclear power plant in eastern Washington state. The company had sought more than $56 million, but agreed to the lower amount to expedite the claim.

Finally, Consumers Energy, former owner of the Palisades and Big Rock Point nuclear power plants in Michigan, has received around $120 million for spent fuel storage costs. The company sold the Palisades plant to Entergy in April 2007, while the Big Rock Point plant has been decommissioned. Consumers will seek approval from the Michigan Public Service Commission to return some of the settlement money to ratepayers.

NRC Issues Legacy Sites Decommissioning Funding Rule

The U.S. Nuclear Regulatory Commission has published a final rule designed to prevent future "legacy sites" with insufficient funds for decommissioning by requiring licensees to minimize the introduction of residual radioactivity at their sites during operations. A legacy site is a facility with an owner who cannot complete complex decommissioning work for technical or financial reasons.

The rule, published in the June 17 *Federal Register,* requires owners licensed by the NRC to keep survey records of residual radioactivity, including in the subsurface soil and groundwater, with records important for decommissioning. It also requires certain licensees to report

additional details in their decommissioning cost estimates and amend some financial assurance mechanisms for decommissioning planning.

Facilities that process large quantities of radioactive material, especially in liquid form, have the potential for significant environmental contamination due to the scale of their operations. Over time, leaks from these facilities can lead to significant radioactive contamination of the subsurface soil and groundwater, even though the radiation doses from these releases are well below annual regulatory limits for public and occupational exposure.

In addition, the high costs of disposing of radioactive material offsite may lead licensees to store more waste onsite, increasing the potential for subsurface radioactive contamination and significantly higher decommissioning costs.

Licensees are currently required to perform surveys to verify that radioactive effluent releases are below regulatory requirements and do not pose public health hazards. However, the NRC believes that existing regulations were not clear enough concerning subsurface contamination and required interpretation to apply to long-term environmental conditions. Surveys have rarely been performed to assess the radiological hazard of chronic releases and subsurface contamination, because these were not specifically defined as effluent releases, represent small fractions of the regulatory limits on effluent releases, and do not cause immediate exposure either to workers or the public.

The final rule also requires more detailed reporting by licensees and tightens NRC control over certain financial instruments set aside to cover eventual decommissioning costs.

The new regulations will take effect Dec. 17, 2012.

SONGS Steam Generators on Their Way to Clive

Four old steam generators from Southern California Edison's San Onofre Nuclear Generating Station (SONGS) are being shipped to the EnergySolutions low-level waste disposal facility in Clive, Utah, in the latter half of this year. Each of the generators will be placed on a 400-foot-long truck and shipped to the site, traveling at a speed of 15 miles per hour through the night in California, but at slightly higher speeds in remote areas of Nevada and Utah.

Each trip is expected to take about three weeks, and officials expect all of the generators to be moved by the end of the year. For security reasons, Southern California Edison is not releasing the exact dates or routes of the transports.

D&D Updates

- The MARS (mobile arm retrieval system) robotic arm was successfully placed in tank C-107 at the Hanford Site in early July, and it was expected to be ready to start retrieving radioactive waste in mid-September. Hanford officials are expecting MARS to operate more quickly and efficiently, tackling not only the bulk of the waste but also the difficult waste at the bottom of the tanks. The arm required a 55-inch hole to be cut into the tank to install a 42-inch riser (see "55-Inch Hole Safely Cut into the Dome of Hanford's Tank C-107," *Radwaste Solutions,* January-April 2011, pp. 48–53).
- American Recovery and Reinvestment Act (ARRA) funding has enabled the U.S. Department of Energy's Carlsbad Field Office to expedite the cleanup of five transuranic waste storage sites and to make important infrastructure improvements at the Waste Isolation Pilot Plant, which disposes of TRU waste. ARRA funding resulted in the cleanup of TRU waste from the General Electric Vallecitos Nuclear Center; Site 300 at the Lawrence Livermore National Laboratory; the Lawrence Berkeley National Laboratory; the Nevada National Security Site (formerly the Nevada Test Site); and from Nuclear Radiation Development LLC. Three additional sites are expected to be cleaned of legacy TRU waste by the end of calendar year 2011. Through Recovery Act funding, the number of weekly shipments being sent to WIPP has increased by 26 percent.
- The remaining Hanford Site cleanup will cost about $115 billion and take until the 2060s, according to the 2011 Life Cycle Report. The Office of River Protection (tank cleanup) will use about $63 billion, while the river corridor and central plateau cleanups will account for about $52 billion.

Long-term stewardship is expected to begin in 2060 and will run through 2090 as part of Mission Support.

D&D Updates—U.K. Edition

● The turbine hall, the largest single building at the two-unit Bradwell nuclear power station, was slated for demolition in late summer, and the utility, Magnox, installed a webcam so the public could follow the demolition over the Internet. Demolition of the building, originally constructed in the 1950s, will mark a significant milestone in decommissioning the station, which operated between 1962 and 2002. The turbine hall housed nine turbine generators. The Internet site is located at http://www.magnoxsouthsites.com/bringing-the-house-down.

Bradwell's turbine hall demolition can be followed on the Internet.

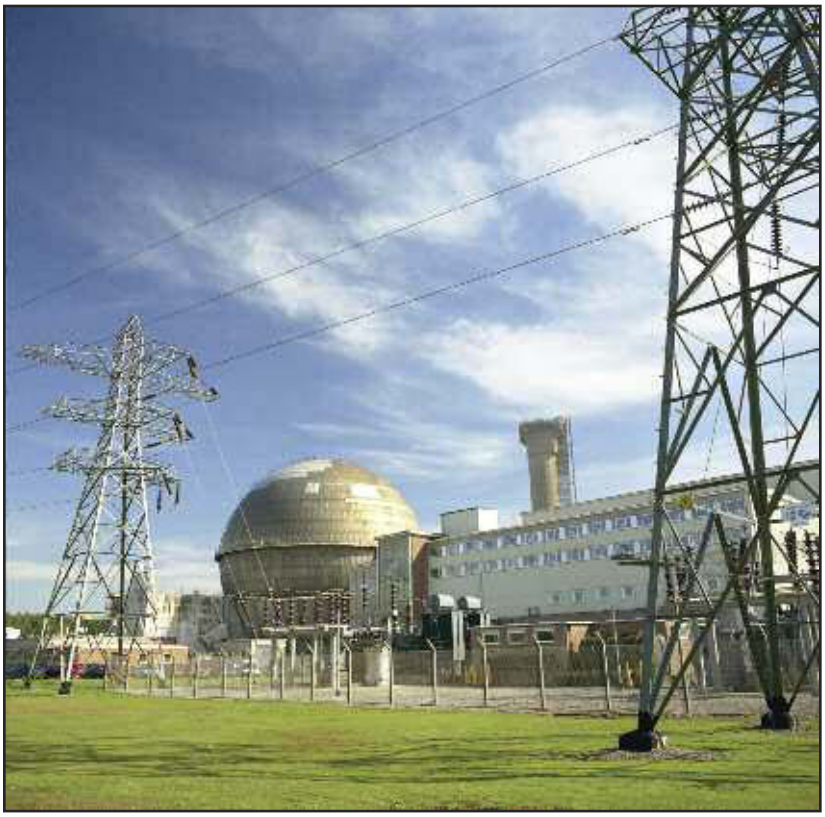
● Nearly 60 years after they first operated, Sellafield's Hurricane Run buildings have been successfully and safely demolished. The buildings were originally constructed to process plutonium solutions into solid metal as part of the Hurricane Run for the United Kingdom's first atomic test at the Monte Bello Islands, off the northwest coast of Australia. They continued to operate, producing other nuclear materials, including tritium and polonium, and contributing to the recovery of highly enriched uranium, until they were converted to drum stores in the 1990s. The demolition was carried out using demolition excavators fitted with grabs and shears. Efforts were made to recycle and reuse equipment during the clearing process, and more than 15 tonnes of materials such as scaffolding were removed from the site for reuse. Waste disposal involved categorizing the brick and block work as very low level waste, while the structural steel work was suitable for processing through the Sellafield wheelabrator for decontamination and release; more than 215 tonnes of metal were recycled during the process.

● Two Magnox sites, Trawsfynydd and Bradwell, are pushing ahead with work to accelerate decommissioning and reach the "care and maintenance" (C&M) milestone years ahead of schedule. C&M marks the phase when all major decommissioning work is complete, leaving only a waste store and the sealed reactors. These will be monitoring until final dismantlement starts in around 60 years or so, when the deep geological disposal facility is expected to be operational. Trawsfynydd is due to enter C&M in 2016, 5 years ahead of the original schedule, while Bradwell will save 12 years by reaching C&M in 2015.

● A cleanup operation funded by the U.K. Nuclear Decommissioning Authority has destroyed more than half of the liquid metal used as coolant in the experimental Dounreay Fast Reactor. Some 57 000 litres of the metal remained inside the reactor when its decommissioning stalled in the 1980s. Now, a purpose-built facility commissioned by the NDA is chemically converting the material and decontaminating it to produce a salty water that is safe to discharge to the sea. Designers originally thought the facility could decontaminate the metal by a factor of up to 1000, but cleanup factors of up to 4 million have been achieved, and the levels of radioactivity in the effluent are now at the limits of detection.

● The United Kingdom's first power reactor, the Windscale Advanced Gas-Cooled Reactor (WAGR), reached a significant milestone as the unique golf-ball-shaped reac-

tor completed its 20-year decommissioning program. The final section of the Outer Ventilation Membrane was safely removed from the reactor's concrete bioshield in late May, marking the successful completion of the final reactor decommissioning campaign. After the decision in 1981 to decommission the reactor, WAGR's decommissioning work was divided into 10 campaigns, with campaigns 1 through 6 completed by 2002, and the remaining campaigns conducted between 2002 and this past May. The reactor building itself has not been demolished; that demolition will take place at a future date yet to be determined.



WAGR: The 20-year decommissioning program is complete.

● Sellafield Ltd.'s Waste and Effluent Disposition directorate is celebrating the successful trials of a new route established for the treatment and disposal of contaminated low-level waste oil from the Sellafield site—a waste that until now had been regarded as a legacy orphan waste. This represents the first ever volume of LLW-contaminated oils from the Sellafield site to be sent for incineration within the United Kingdom. The trials successfully tested the viability of the process and the route that involves transporting consignments of oil for disposal by thermal treatment via the Fawley Thermal Treatment Center in Hythe, Hampshire, and will be instrumental in dealing with a site inventory of approximately 250 cubic meters of the contaminated oil.

● A 16-piece tool dubbed the world's most sophisticated Swiss Army knife will be helping dismantle the Dounreay Fast Reactor in Caithness. The £20 million (approximately $33 million) device, designed by French firm Framatome, will operate in highly radioactive conditions inside Dounreay's landmark dome. Its detachable tool bits cost £100 000 ($163 000) each and weigh between 37 and 93 kilograms. They will cut and grab the reactor's 977 2.5-m (8-ft) fuel rods. Up to three tool bits will be in used at any one time and can be replaced by another three carried in a special tool box without the need to remove the tool itself from the reactor. The rest of the tool bits will be stored above the reactor and would be fitted into place during service and maintenance breaks. Special radiation-proof cameras and spotlights will guide operators working around the clock in a control room 6 m (20 ft) above the reactor. The rods will eventually be transported by train to Sellafield for reprocessing.

● A new self-erecting tower crane has been built at Sellafield as part of the work to retrieve historical waste from the 60-year-old Pile Fuel Cladding Silo (PFCS), which contains nuclear waste that must be retrieved, processed, and packaged. This type of self-erecting crane has been used around the world since 2007, but its application in this project is new to Sellafield. The 38-m-high crane has a relatively small footprint (4.5 by 4.5 m), which makes it ideal for the restricted construction site available to the PFCS project. Retrieval of silo waste is expected to begin in 2017.

International Briefs

● The Japanese government is planning to allow residents from certain areas near the damaged Fukushima Daiichi nuclear power plant to return to their homes. As early as August, residents and business owners from within three kilometers of the plant were to be able to pay short visits to check their properties. The Ministry of Economy, Trade and Industry was also planning to simplify evacuation preparedness, lifting the request for people in the 20–30-kilometer zone to be prepared for evacuation. Furthermore, the ministry said it may be possible for some people from evacuated areas to return home permanently, now that the damaged reactors are becoming more stable and radiation levels have decreased. The decision to allow people to return home would be based on three considerations, the ministry said: the safety level of the nuclear plant and at what distance from it adequate safety can be ensured for residents; the results of radiation monitoring to determine whether levels are safe for residents in their specific locations; and how easily services and infrastructure can be recovered in different areas.

The multi-unit Fukushima Daiichi plant suffered severe damage from a March earthquake and tsunami. The plant owner, Tokyo Electric Power Co., hopes to have the affected units stabilized and in cold shutdown by the end of the year. Full coverage of the Fukushima Daiichi situation and the efforts to stabilize the reactors can be found in this magazine's sister publication, *Nuclear News.*

● Russia has a new federal law on radioactive waste management that establishes a legal framework for radioactive waste management in the country and formally creates a unified state system for it. The new law introduces classification for radioactive wastes and brings Russia's national waste management system into line with the requirements of the Joint Convention on the Safe Management of Spent Nuclear Fuel and on the Safe Management of Radioactive Waste, which Russia ratified in 2006. The law includes provisions on the treatment of certain types of waste and regulates waste management activities, including a ban on the construction of new facilities for the disposal of liquid wastes in geological formations. Waste management will be the responsibility of Rosatom and national radioactive waste management operator RosRAO. Additional legislation dealing with high-level waste is pending.

● The European Union's 27 member states must have in place by 2015 a plan to safely dispose of radioactive waste, using staff that are properly trained and regulated, under a new policy directive adopted by the European Council in July. The new plans must cover waste transport and include a concrete timetable for the construction of disposal facilities. Ultimate responsibility for waste management will remain with the member states. The directive recognizes both direct disposal of spent fuel as waste and fuel reprocessing, with the remainder disposed as waste. Exports of waste between EU countries will be allowed, recognizing that two or more states could combine to create a shared facility. Exports outside the EU will be allowed only to countries that have operating disposal facilities that meet International Atomic Energy Agency standards. If fuel is reprocessed overseas, the resulting wastes must be returned to the originating country.

● Enough funding is in place that construction can begin on the new shelter for the damaged reactor at the Chernobyl nuclear power plant in Ukraine, that country's minister of foreign affairs said in mid-July. With international pledges of $941 million in place, construction was set to begin in October. The pledges will be used to complete the New Safe Confinement, a vast structure to be constructed over the damaged Unit 4 reactor at the plant. The structure will allow the dismantling and cleanup of the damaged plant in a controlled environment.

● Germany has granted €174 million ($247 million) to Russia for the construction of a new radioactive waste processing and storage facility in the Saida Bay on Russia's coast to the Barents Sea. The processing plant will receive radioactive waste from the many submarine bases and naval yards along the coast of the Kola Peninsula. Thousands of cubic meters of solid radioactive waste are currently stored in inadequate facilities along the coast, and the amounts of waste needing storage have increased with the decommissioning of some 120 Cold War–era nuclear-powered submarines. The German grant is part of the G8's Global Initiative to secure radioactive material. Funding will begin in 2012 and continue to 2014.

● Low-level radioactive waste packages dating from the 1960s and stored at the Nuclear Energy Corp. SA facility in northwest South Africa are being removed to the Vaalputs waste disposal site. The first shipment of 210 packages arrived at the site on May 11. The packages contained low-level radioactive waste items such as plastic gloves and shoes worn by nuclear workers. The 1200-kilometer trip took some two days to complete. Vaalputs was confirmed as the country's dedicated LLW disposal facility in 2005. ■