

Court Rules Against 10 000-Year Radiation Safety Standard at Yucca Mountain

Saying the Environmental Protection Agency “unabashedly” ignored a National Academy of Sciences report on future radiation levels at the facility, a US appeals court sends the radioactive waste problem back to Congress.

In the hours after the US Court of Appeals for the District of Columbia rendered its 9 July decision on the future of the Yucca Mountain nuclear waste facility, all sides in the case were declaring victory. At the Department of Energy, Secretary Spencer Abraham said he was “pleased” with the decision and noted that the court “dismissed all challenges to the site selection of Yucca Mountain. Our scientific basis for the . . . project is sound.”

Out in Nevada, where Yucca Mountain is located, State Attorney General Brian Sandoval all but pronounced the project dead, saying, “Simply put, Yucca is stopped in its tracks because the court recognizes that the project isn’t rooted in sound science. We wouldn’t trade places with the opposition.” Sandoval was referring to the court’s ruling that the US Environmental Protection Agency’s (EPA’s) 10 000-year safety standard for the facility doesn’t follow the 1992 Energy Policy Act.

Back in Washington, DC, the Nuclear Energy Institute (NEI), the organization that represents the nuclear industry, was expressing confidence that DOE would be able to meet the “eventual standard” of radiation safety for Yucca and that “the licensing process for the repository will continue without interruption or delay.” NEI added that the “scientific basis for the facility . . . is still sound today.”

So the science is sound or it isn’t, depending on whether you are in favor of or opposed to the federal government’s plans to move some 77 000 tons of high-level radioactive waste into the mountain, beginning in 2010. Most of the waste is now sitting in pools and dry-storage casks at more than 100 interim storage sites in 39 states.

The nuclear industry would like to see the waste go to Yucca Mountain, and so would DOE and the Bush administration. Democratic presidential candidate John Kerry would like to shut down the Yucca Mountain project, as would most local, state, and federal politicians from Nevada.

What exactly did the court rule, and what does that ruling mean for Yucca Mountain’s prospects? The court consolidated 12 lawsuits against Yucca into one case, and then dismissed all challenges to the project—except one. The court ruled that the EPA “unabashedly rejected” earlier findings by the National Academy of Sciences (NAS) that said “some potentially important exposures [to radiation] might not occur until after several hundred thousand years.”

The academy, in a 1995 report, said that the radiation standard for the facility should be measured at “the time of peak risk, whenever it occurs.” That could be on the order of a million years, the academy noted.

In passing the 1992 Energy Policy Act, Congress required the EPA to set

standards for Yucca Mountain consistent with the time frame for radiation risks as determined by the NAS. The EPA, according to the court, intentionally disregarded the NAS peak-dose standard as, quoting from an EPA regulation, “not practical for regulatory decision making.” Instead, the EPA settled on a 10 000-year standard based on “policy considerations,” the court said.

The court concluded that the EPA must either issue a revised standard that is “consistent with” the NAS peak-dose standard “or return to Congress and seek legislative authority to deviate from the NAS report.”

“It was Congress that required the EPA to rely on NAS’s expert scientific judgment,” the court decision said, “and given the serious risks nuclear waste disposal poses for the health and welfare of the American people, it is up to Congress—not EPA and not this court—to authorize departures

Frankfurt Honors Hans Bethe

Hans Bethe as creator of the Sun. That’s a nod to Bethe’s research on energy production in stars, for which he received the 1967 Nobel Prize in Physics. The painting, by Bavarian artist Jürgen Jaumann, was commissioned to coincide with an honorary doctorate bestowed on Bethe this summer by the Johann Wolfgang Goethe University in Frankfurt, Germany.

Bethe, who turned 98 in July, had foresworn accepting any more honors. He made an exception this time. “I felt delighted,” he said in a statement read by his half brother, who represented Bethe at the ceremony. “Frankfurt is the familiar town of my youth.” Bethe attended school and began his university studies in Frankfurt, and held his first teaching position there. He left Nazi Germany in 1933 after he was dismissed from a professorship because he is half Jewish. In the US, he worked on the Manhattan Project and has been on the faculty of Cornell University since 1935.

Horst Schmidt-Böcking, the retired dean of physics at the Frankfurt university and a driving force behind both the painting and the honorary doctorate, says, “Frankfurt owes Hans Bethe a lot in terms of science. We will fight to make his name well known in this city. This honor was long overdue.”

The portrait hangs in the Frankfurt university’s new physics building. Cornell will be given a second, similar portrait.

Toni Feder



from the prevailing statutory scheme.”

DOE, as the owner of Yucca Mountain, was expected to challenge the ruling, but the three-judge appeals panel was unanimous, and several congressional observers said the assumption on Capitol Hill is that the ruling will stand. If the court ruling does stand, the solution lies in Congress’s changing the law to be consistent with the 10 000-year standard the EPA is using. None of the parties involved is advocating a radiation standard based on containment for hundreds of thousands of years or more.

Not an easy vote

“This is a real problem that the advocates don’t know how to get around,” said a congressional staff member who follows the issue. “The way around it is passing a law that says it’s okay to use the 10 000-year standard, but that’s not going to be an easy vote up here.”

One of Yucca Mountain’s chief advocates, Senator Pete Domenici (R-NM), said that if the decision stands, “the ramifications are enormous. It may go well beyond Yucca. It may be the end of the nuclear industry.”

But with Kerry on record against

the project, and Nevada lawmakers in both the House and Senate opposed to the Yucca Mountain repository, the odds of passing a relaxed radiation standard are not high. That is especially true in an election year when Nevada is considered a swing state in play for both Democrats and Republicans.

The problems relating to Yucca Mountain are not limited to the court ruling. A budgeting disagreement between the White House and Representative David Hobson (R-OH), chairman of the energy and water subcommittee of the House Committee on Appropriations, has resulted in a drastic cut in the fiscal year 2005 budget for Yucca Mountain.

The administration wants \$880 million for the facility in FY 2005, but to keep the overall budget numbers down, it submitted a budget request of only \$131 million. The Office of Management and Budget (OMB) proposed that the remaining \$749 million should come from fees paid into the nuclear waste fund—a multibillion-dollar fund contributed by the nuclear industry over many years to cover the cost of storing radioactive waste.

The dispute arose because the nu-

clear waste fund exists only on paper. The money that the nuclear industry pays goes into the general fund and is not set aside for radioactive waste costs. So the OMB proposal to “re-classify” nuclear waste fees so they could be used for Yucca Mountain means \$749 million would be taken from the general treasury. Thus far, Congress has balked.

“OMB played Russian roulette when they assumed the House and Senate would pass the proposed reclassification language,” Hobson said. Other lawmakers described the OMB plan as “muddled” and a “budget gimmick.” Legislation has been introduced to authorize the OMB reclassification, but its prospects are uncertain. Should the House reverse course and authorize \$880 million for Yucca Mountain, the prospects for quick action—or any action—in the Senate prior to the presidential election are not good.

Congressional staff members and other observers expect that a continuing resolution will be passed to keep funding Yucca Mountain at FY 2004 levels until both the court case and funding dispute can be resolved.

Jim Dawson

US Physics Teachers Volunteer in AIDS-Ravaged Zambia

With a small grant and a good idea, a group of Virginia physics teachers is working in a remote area of Zambia to prevent physics education from becoming a victim of the AIDS pandemic.

About 50 kilometers down a dirt road in southern Zambia, more than 600 girls aged 12 to 20 live and attend classes at the St. Joseph’s Girls’ Secondary School. A third of them are HIV/AIDS orphans in a country hit hard by the disease. The pandemic is also ravaging the country’s teaching corps—about 20% of Zambia’s teachers have HIV/AIDS. They are dying at a rate of about 1000 per year, faster than they can be replaced.

When circumstances at the school permit, the girls study physics. Calculators are rare, computers are even rarer, and labs with equipment to run experiments are almost nonexistent. But the girls have to learn classical mechanics, electricity and magnetism, and a host of other topics in the physical sciences to pass their state-mandated exams. Fail, and their formal education ends.

It is into this world that a handful of high-school physics teachers from Virginia have stepped, in what they describe as a “grassroots” effort to

keep physics alive in Zambian schools. They’ve chosen St. Joseph’s school, which they describe as being “in the middle of nowhere,” as their base of operations because, despite its problems, it is one of the best schools in the southern African nation.

The US teachers are working with a four-year, \$50 000 grant from Hampton University’s Physics Frontier Center, an NSF-funded educational program under the umbrella of the Center for the Study of the Origin and Structure of Matter. Part of the COSM mandate is education and outreach, which is the emphasis of the Hampton program. The university, in Hampton, Virginia, is one of the oldest schools centered on education for African Americans.

The teachers began the project last summer by conducting two weeks of workshops for physics teachers at a handful of Zambian schools. “The people we’re doing these workshops with are the people who are going to be out there in front of those class-

rooms with the physics, chemistry, and math students,” said Charles Tisdale, a retired US Navy nuclear reactor operator who teaches physics at Princess Anne High School in Virginia Beach. “We’re thinking global, but we’re acting local in the sense that we’re trying to get down and do something in Zambia that’s going to make a difference. And it is also paying off as a reward to us.”

An education collaboration

Described as “a collaboration in education,” the COSM project began when Ken Cecire, an education specialist at Hampton, led the five physics teachers, three NASA scientists, and a teacher from Marymount International School in Rome to the St. Joseph’s school. After workshops with Zambian teachers at St. Joseph’s, the group conducted workshops at two other Zambian schools: St. Mary’s High School in Livingstone and the Kabulonga Boys High School in the capital city of Lusaka.

Cecire and several of the teachers were back in Zambia last month for three weeks of workshops to begin implementing a four-year physics cur-