

Yucca Mountain News—Fall 2006

Churchill County Nuclear Waste Oversight Program

<http://www.churchillcounty.org>

Inside this issue:

Judges Reject Nevada Lawsuit	3
WGA Ignoring Clean Energy of Nuclear Power	4
Agency Chief Says Yucca Plans Not Necessary	5
Used Nuclear Fuel Management	6

In the News

- WASHINGTON — Brushing aside concerns from members of Congress, scientists and anti-proliferation activists, the Energy Department is moving ahead with a plan to recycle nuclear waste into new power plant fuel.
- Sen. Pete Domenici, R-N.M., chairman of the Senate energy appropriations subcommittee is submitting legislation to be considered when Congress returns from its recess early next month, which would require governors in states with nuclear power plants to create temporary spent fuel storage facilities by 2012.
- In August the Department of Energy quickened the pace of its plan to develop technologies and facilities to reprocess spent nuclear fuel in the U.S. It announced \$20 million in aid to public and commercial groups to conduct siting studies needed to build plants that would be part of a system to reuse spent nuclear fuel.

There have been no announcements or sudden movements, but the signs are clear. The nuclear energy industry is revving up with plans to build the first nuclear power plants in this country in three decades.

The issue of nuclear waste disposal at Yucca Mountain is closely tied to that progress.

Legislation pending in Congress would provide an alternative to creating a permanent waste repository at Yucca Mountain. If approved, the legislation will allow for creation of interim storage sites around the country, a step that would remove the handcuffs from an industry that has been barred from building new nuclear plants until the nation finds a way to store the waste. It is now stacked up at each of the nation's 104 nuclear plants.

Yucca Mountain, now nearly 20 years behind schedule, is currently the only option as a storage site. The government has refused to create any alternative for fear it would slow development of Yucca.

Now, however, lawmakers and others are recognizing that Yucca's delays could be indefinite, if not permanent.

Constellation Energy and AREVA, a partnership established last year to build nuclear reactors, announced two weeks ago that they have placed orders for the heavy steel

New Light on Yucca

forgings necessary to build the first new nuclear power plant in the United States since the 1970s. At least 20 reactors are under discussion around the nation.

But none can be built until the waste disposal

the legislation agree with Domenici. If they did, you could expect to see much teeth gnashing from Sen. Harry Reid, D-Nev., and the army of Nevada elected officials opposed to developing Yucca.

Instead, they are grinning like Cheshire cats. They think that interim storage sites might not be all that "interim." History is on their side.

Congress wants to get over the mountain on nuclear waste



It shows that creating a site - any kind of site - to store nuclear waste is a big step. From there, it's but a short step for "interim" to evolve into "permanent." When interim storage was debated 20 years ago, opponents made their case by arguing what was known as

the law of nuclear waste - wherever the waste lands, that's where it stays. You won't hear Nevada officials using that language, for fear of stirring up opposition. But what you do hear is an industry increasingly interested in alternatives.

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"There was an expectation in the '80s and '90s we were going to have a repository fairly soon," said Steven P. Kraft, senior director of used fuel management for the Nuclear Energy Institute, the main lobbying arm of the nuclear industry. "Now people are so frustrated about the lack of progress in a repository they're beginning to think about what kind of facilities

issue is addressed. Many backers of the interim storage legislation, including Republican Sen. Pete Domenici of New Mexico, insist that it is merely a way to let the energy industry move forward while Yucca is developed. In fact, separate legislation to get Yucca back on track is also pending before Congress.

But not all supporters of

(Continued on page 2)

New Light on Yucca (continued)

All in good time:

The opening date for Yucca Mountain as a storage site has been changed many times:

1982: Congress passes the Nuclear Waste Policy Act establishing the development of two national repositories for nuclear waste. Scheduled opening 1998.

1987: In what became known as the "Screw Nevada" bill, Congress names Nevada's Yucca Mountain as the only site to be studied and drops plans for interim storage elsewhere.

1989: The Energy Department moves the repository opening date to 2003.

1994: The Energy Department moves the repository opening date to 2010.

2000: The Senate falls one vote short of overriding President Bill Clinton's veto of interim waste storage in Nevada.

2002: Congress passes the Yucca Mountain Development Resolution naming the site as the national repository.

2006: The Energy Department moves the repository opening date to 2017. New plans for interim storage are proposed.

(Continued from page 1)
we need to accept this material."

Gov. Kenny Guinn summed up the state's view last week in an opinion piece in the Reno Gazette-Journal. The legislation "implicitly recognizes for the first time that the country is on the wrong track in its approach to dealing with spent nuclear fuel and high-level radioactive waste," he said.

"Although the battle is not yet over," he wrote, "I am very encouraged by the new thinking and direction in Congress."

What a difference a generation makes. In 1987, most of the country outside of Nevada breathed a sigh of relief when Congress put Yucca Mountain on the short list to house the nation's waste. No one wanted the dump in their back yard.

When Yucca missed its first opening deadline and waste kept piling up, President Bill Clinton vetoed a 2000 proposal led by Republican House Speaker Dennis Hastert for temporary storage in Nevada.

Now Yucca is uncertain, and interim storage plans would dump waste in many back yards. Any of the 31 states with nuclear reactors could be designated by the federal government as an interim site where waste could be stored for up to 25 years under the legislation.

As a result, various governors have dashed off letters urging the Energy Department to move ahead with Yucca.

At a House committee hearing last month, Republican Rep. John Shimkus of Illinois, the state with more nuclear waste than any other, put it bluntly: "That's

the stupidest idea I ever heard of and we cannot go there."

"Certainly, there's been a fair expression of concerns," said Charles Pray, a former Energy Department official in the Clinton administration who now serves as Maine's nuclear safety adviser. "It's taking us right back to the early 1980s when Congress di-



rected the Department of Energy to find a national repository."

For Domenici, it's all about the math. Even if Yucca Mountain gets up and running by 2017 as now planned, it will still take decades to move all of the waste now sitting at nuclear reactor sites nationwide - a point he reiterated in a letter to one of the governors. Plus more waste is being generated each day - at a rate of 2,000 metric tons a year.

Every day the waste sits, the government amasses enormous financial liability for not opening Yucca on time - or providing some other storage solution. Nuclear power companies nationwide have sued to recover the cost of continuing to store the waste near their plants, and the government is bracing for \$7 billion in court-ordered payouts until Yucca opens.

Domenici and the Bush administration envision a

sweeping change in the way the nation treats its waste, with the waste making a midway stop rather than going directly into permanent storage.

Instead, it would be recycled, converted back into fuel. That cycle could be repeated many times before it reaches a form so depleted that it cannot be recycled again. That final, spent waste would be much less toxic than existing leftovers.

At that point, in the opinion of Domenici and the Bush administration, the stuff should go to Yucca.

Skeptics in the scientific community say the idea is preposterous, as do environmentalists and others who seek to prevent construction of any more nuclear plants.

The kind of recycling being advocated was shelved by this country nearly 30 years ago, the critics say. The science involved is unproven and the technology does not exit. To pump the billions of dollars into trying to develop the technology would be an enormous waste.

But Bush promoted the new form of recycling earlier this year, and the Energy Department announced this month that it was soliciting ideas to begin the research.

"There's always interest in these proposals," said Craig Nesbit, spokesman for Exelon Nuclear, the nation's largest nuclear energy company. "It's never a bad idea to look at all your options." Source: Las Vegas Sun

Judges Reject Nevada Lawsuit

WASHINGTON -- Nevada suffered a setback on in its latest attempt to derail the government's plans for a Yucca Mountain nuclear waste repository. A three-judge federal court panel declined a Nevada lawsuit charging that the Energy Department had violated environmental law and federal procedures when it

formed a strategy to ship radioactive spent fuel to the Nevada site.

"We conclude that some of Nevada's claims are unripe for review and the remaining claims are without merit," Judge Karen LeCraft Henderson wrote in a 26-page opinion filed in the U.S. Court of Appeals for the District of Columbia Circuit.

Henderson was joined in the ruling by Judges Harry Edwards and A. Raymond Randolph. The judges heard oral arguments last October.

The ruling preserves the status quo for the Yucca Mountain project. The Department of Energy is studying a 318-mile corridor from Caliente across rural Nevada in which to build a railroad to the proposed repository site 100 miles northwest of Las Vegas.

"We are very pleased with the court's decision," said Craig Stevens, a DOE spokesman. "The court's ruling today upheld the transportation aspects of the department's comprehensive environmental impact statement for the Yucca Mountain Project." Joe Egan, Nevada's lead

nuclear waste attorney, said state officials are evaluating whether to appeal the ruling. Egan said the state disagreed with the court's reasoning that it was premature to challenge DOE on elements of its railroad plans.

"It is really clear that having ruled against us in such Draconian fashion it just seemed they didn't

want to do anything to upset Yucca Mountain," Egan said. Stevens

said DOE attorneys are evaluating the decision for possible impacts on other parts of the project. For instance, the DOE is weighing a possible alternative railroad line to the repository through the Walker River Paiute reservation in western Nevada. The DOE also has made other changes since the Nevada lawsuit was filed last year, including initiating redesigns for canisters that would carry nuclear waste to the repository. In the court's ruling, Henderson wrote that the DOE was within its authority in how it managed environmental impact studies and other documents that supported its transportation planning.

"We conclude that DOE's analysis of the environmental impacts of its rail corridor selection in its (final environmental impact statement) is adequate," Henderson wrote.

"It is well settled that the court will not 'flyspeck' an

agency's environmental analysis looking for any deficiency no matter how minor," the judge wrote. The court declined to consider other issues raised by the state, saying it was too early and the DOE had not yet made final decisions on them.

In the 10 months since the oral arguments, Nevada officials and attorneys had expressed confidence that the state would prevail on at least some of its arguments. They said they were surprised and disappointed.

"We all thought it was one of our best cases," said Bob Loux, director of the state Agency for Nuclear Projects. "Obviously this would have brought everything in the transportation arena to a halt."

Loux said the state probably would file new lawsuits later on the matters that the court said were premature to be considered at the present time.

The state has two other active cases pending related to the Yucca Mountain, although neither are major.

Oral arguments are set for September in Washington where the state is challenging a federal regulation dealing with repository licensing.

In a second case, state officials have filed a Freedom of Information Act lawsuit in federal court in Reno seeking to obtain a copy of the DOE's draft license application for the repository. Source: Las Vegas Review Journal



For more information about the proposed Yucca Mountain Nuclear Waste Repository please visit the local county library and ask for the Yucca Mountain Nuclear Repository area.

Churchill County Library
553 S. Maine Street
Fallon, NV 89406
Phone 775/423-7581

Children's Department
775/423-7582
E-mail churchil-
linfo@clan.lib.nv.us
Library Hours:
Monday, Thursday, Friday:
9am - 6pm
Tuesday, Wednesday: 9am
- 8pm
Saturday: 9am-5pm
Closed on Sundays, State
and Federal Holidays.

For on-line information please visit our website: churchillcountynwop.com. The links page offers connections to many outside sources the following are just a few:

Public Interest

[NIRS - Nuclear Information and Resource Service](#)
[Yucca Mountain Geophysical Studies](#)
[Sierra Club Nuclear Waste Task Force](#)

Non Government Organizations

[Citizen Alert](#)
[Public Citizen's Critical Mass Energy Project](#)
[NIRS - Nuclear Information and Resource Service](#)
[T-REX - Transportation Resource Exchange Center](#)
[NRDC -- Natural Resource Defense Council](#)
[Worldwatch Institute](#)
[Western Interstate Energy Board \(WIEB\)](#)
[The Committee for Nuclear Responsibility](#)
[ANS - American Nuclear Society](#)

Government Agencies

[US Department of Energy](#)
[Western Interstate Energy Board](#)
[Transportation External Coordination Working Group](#)
[Nuclear Waste Technical Review Board](#)
[US DOE National Transportation Program](#)
[US Nuclear Regulatory Commission](#)
[State of Nevada \(Nuclear Waste Transportation\)](#)

WGA ignoring Clean Energy of Nuclear Power

As we seek effective ways to reduce our growing and dangerous dependence on imported oil and natural gas and combat global warming, nuclear power must play an essential role. China, Japan, France, Russia and other countries are aggressively expanding their nuclear power base. President Bush recognizes the need for nuclear power, and Congress has approved financial incentives for construction of the first new, advanced U.S. nuclear power plant in this century. Yet the U.S. nuclear renaissance may be impeded in the West unless Western governors respond appropriately.

The Western Governors Association's (WGA) recently adopted resolution on Western energy development was unsettling. The resolution called for 30,000 megawatts (30 GW) of "clean power generation" by 2015 made up of renewable sources, hydro, coal gasification, natural gas and cogeneration. Incredibly, nuclear power is not included in the WGA plans.

Ignoring nuclear power in a regional plan that purports to address global warming is irrational and unrealistic. Nuclear power accounts for 20 percent of the U.S. electricity and about 75 percent of U.S. emission-free power. Without nuclear power's production of clean energy, the EPA reports that CO2 emissions would be higher by 680 million metric tons a year. This is equivalent to the emissions from 130 million automobiles or about two-thirds of the entire U.S. automobile fleet.

In contrast, power plants that burn coal and natural gas that received WGA approval severely pollute the biosphere. U.S. coal plants dumped about 2 billion metric tons of carbon into the

atmosphere last year, and more than 120 additional coal-fired plants are planned or under construction.

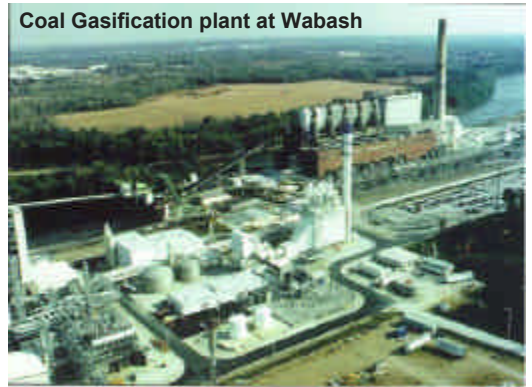
Perhaps the governors should call for a tax on carbon emissions in the WGA plan, along with a market-based cap-and-trade system for reducing emissions. Such a system has been used since 1990 and is remarkably effective in reducing emissions of sulfur dioxide that produces acid rain and smog-forming nitrogen oxides. To be even more effective in controlling greenhouse gases, utilities should begin to replace carbon-rich coal with nuclear, solar and wind power.

Presently, 16 U.S. utilities plan to build 27 (GO size) nuclear power plants. The "base-load" electricity from these plants will help meet the projected 40 percent increase in electricity demand by 2030. The Energy Information Administration says that 60 plants must be built by then if nuclear power is to maintain its current share (20 percent) of U.S. electricity production.

A Gallup poll shows that a majority of Americans now support nuclear power. Many of the nation's leading environmentalists recognize that nuclear power must play a central role in the battle against global warming.

Western governors should realistically reconsider the true energy issues. Only nuclear power can provide the massive infusion of clean energy required to control global warming, limit oil and natural gas imports, and eventually provide the primary energy source required to develop a "hydrogen economy" and free us from fossil fuel dependence. Gary M. Sandhurst is a professor of mechanical engineering and former director of nuclear engineering at the University of Utah.

Coal Gasification plant at Wabash



U.S. coal plants dumped about 2 billion metric tons of carbon into the atmosphere last year, and more than 120 additional coal-fired plants are planned or under construction.

Hydro power



Photo credit: U.S. Bureau of Reclamation

The now imploded tower at Trojan Nuclear Power Plant. See story next page.



Nuclear power accounts for 20 percent of the U.S. electricity and about 75 percent of U.S. emission-free power.

Natural gas pipeline



Installation of a natural gas pipeline. Power plants that burn coal and natural gas that received WGA approval severely pollute the biosphere

Trojan Nuclear Power Plant



Location: 50 miles E of Astoria, 5 miles S of Longview, WA

The only nuclear power plant in Oregon shut down twenty years early, after a cracked steam tube released radioactive gas into the plant, in 1992. It cost \$450 million to build the plant, and it is expected to cost the same amount, at least, to make it go away. In 2001, the 1,000 ton 1,130 megawatt reactor was encased in concrete foam, and coated in blue shrink-wrapped plastic, then shipped up the Columbia River on a barge to the Hanford Nuclear Site in Washington, where it was placed in a 45 foot deep pit, and covered with six inches of gravel, making it the first commercial reactor to be moved and buried whole. The plant went on line in 1976, and was said to have been built on an Indian burial ground. When it shut down 16 years later, it was the largest commercial reactor to be decommissioned. The 500 foot tall cooling tower was imploded in May 2006. The spent fuel rods, however, are still stored on site, as they are at all the other 108 or so commercial reactors in the country. Almost 800 rods are in a pool, next to the Columbia River, awaiting the possible opening of the Yucca Mountain radioactive storage facility in Nevada.

Agency Chief Says Yucca Plans Not Necessary

CARSON CITY -- Nevada officials have objected to the U.S. Department of Energy's plans to build a "road to nowhere" along with other construction projects at Yucca Mountain, saying the work is illegal and unnecessary.

DOE and its Office of Civilian Radioactive Waste Management have submitted a draft environmental assessment proposing a wide range of infrastructure improvements at Yucca Mountain, the site about 90 miles northwest of Las Vegas proposed by DOE for the nation's first high-level nuclear waste repository.

Bob Loux, executive director for Nevada's Agency for Nuclear Projects, outlined Nevada's objections to this proposal in a letter sent this week to Dr. Jane Summerson, an environmental assessment document manager for DOE, according to an

Aug. 8 prepared statement.

Loux summed up the two main reasons why Nevada contends the entire proposal is unnecessary: "First, if DOE does not receive a license, or DOE's application is further delayed, this project will spend millions of dollars for only a tiny return. Second, the no-action alternative appears capable of fulfilling all of the stated project purposes.

"The proposed action contained in the draft EA (environmental assessment) is unnecessary, unjustified and lacking in legal authority," Loux concluded in the letter. "The proposed facilities and infrastructure can only be justified to support the construction and operation of a Yucca Mountain repository, something that is not permitted under law until DOE has received a construction authorization from the Nuclear Regula-

tory Commission."

Loux said Nevada officials and others have raised enough scientific and safety concerns about the Yucca Mountain Project over the years that he believes the site will never be licensed to hold nuclear waste. As a result, he said DOE's proposed multimillion-dollar construction program would be the real waste.

"This plan could only be justified if the Yucca Mountain repository is approved, and there is no certainty that will ever occur," Loux said. "In short, the EA does not credibly explain why DOE is pursuing these improvements."

In addition to new buildings, power lines and other infrastructure on the Yucca site, DOE proposes to build about 25 miles of new and replacement roads during a two-year construction period. Loux said one of the more

unnecessary parts of DOE's plan calls for a two-lane, 36-foot-wide paved road to the crest of Yucca Mountain, "even though no scientific work has been done on top of the mountain.

"This is really a road to nowhere," he said.

Nevada also objects to the increased use of groundwater the DOE plan would require. Loux said DOE's proposal would require using more water than DOE has said in court proceedings that it needs, and more than the state has allowed the federal agency to use at the site.

He said DOE is also being misleading when it cites "the health and safety of its workers, regulators and visitors" to the Yucca Mountain site as the main reason for its planned construction pro-

(Continued on page 6)

Agency Chief Says Yucca Plans not Necessary (continued)

(Continued from page 5)
jects. In fact, he said the director of the Office of Civilian Radioactive Waste Management told the U.S. Senate Energy and Natural Resources Committee as recently as Aug. 3rd that DOE's plans for new infrastructure at Yucca Mountain are unrelated to health and safety issues.

The two-year, multimillion-dollar construction program is also more significant than DOE has suggested, according to Loux. Source: Pahrump Valley Times

For more information contact Churchill County Nuclear Waste Oversight Program at 85 North Taylor, Fallon, NV 89406, (775) 428-1592. Additional information on the repository program can be obtained from the U.S. Department of Energy, Yucca Mountain, Site Characterization Project Office at (702) 794-1444 or www.ymp.gov. The Nevada Agency for Nuclear Project, Nuclear Waste Project Office, Capital Complex, Carson City, Nevada 89570, (775) 687-3744 or <http://www.state.nv.us/nucwaste>. Churchill County's Nuclear Waste Oversight Program's website address <http://www.churchillcountynwop.com>.

Used Nuclear Fuel Management

Solid Used Fuel: To generate electricity, nuclear power plants use uranium oxide fuel—in the form of small ceramic pellets—that is placed inside metal fuel rods. These rods are grouped into bundles called assemblies. Fission—the splitting of uranium atoms in a chain reaction—produces a tremendous amount of heat energy for the amount of material consumed. This energy is used to boil water into steam, which drives a turbine generator to produce electricity.

Every 18 to 24 months, the plant is shut down and the oldest fuel assemblies—which have released their energy but have become intensely radioactive as a result of fission—are removed and replaced.

All the used nuclear fuel from nuclear power plants is in solid form. A typical 1,000-megawatt nuclear power plant produces enough electricity for 759,000 homes and about 20 metric tons of used uranium fuel each year.

The country's 103 commercial nuclear reactors together produce about 2,000 metric tons of used fuel annually. Today, this used fuel is stored safely at plant sites, either in steel-lined vaults filled with water or steel-and-concrete containers.

Interim Options: Expanding On-Site Storage
The delay in the construction of a permanent repository has forced nuclear power plants to

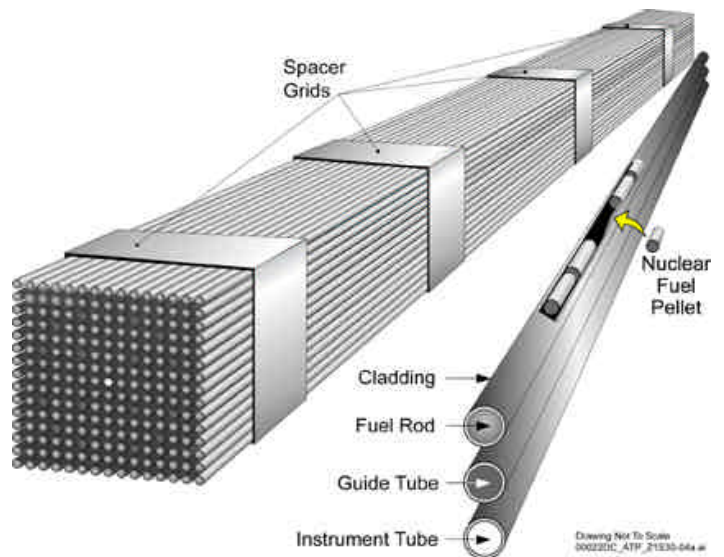
store more used fuel than expected for longer than originally intended. The result is that many nuclear plants are running out of existing storage capacity. By the end of 2006, about 60 reactors will have no more storage space in their used fuel vaults, and by the end of 2010, 78 will have exhausted their original storage capacity.

When a plant's used fuel vault nears its designed capacity, a company has two options.

Re-Racking
Typically, the first choice is to re-rack the vault of used fuel, moving the fuel assemblies closer together. More than 30 re-racking have been done

though a few companies have shipped used fuel from one plant to another with extra storage capacity, this option is not available to every company. Most nuclear plants have used the additional capacity gained by re-racking, and a growing number have built or are building storage facilities that use concrete and steel containers.

Container storage
A number of nuclear plants are storing used fuel in large, rugged containers made of steel or steel-reinforced concrete. The containers use materials like steel, concrete and lead—instead of water—as a radiation shield. Depending on the design,



Fuel assembly: A cluster of fuel rods (or plates). Also called a fuel element. Many fuel assemblies make up a reactor core.

at various nuclear plant sites—all while maintaining safety. But re-racking has its limitations.

Eventually, these vaults reach their capacity. Building a new used fuel vault is not an option. It is costly and almost impossible to fit a new structure into the plant layout. AI-

a dry container can hold form seven to 56 12-foot-long fuel assemblies. The NRC has certified several designs for use by utilities. The containers have a 10-year license. After 20 years, they must be inspected, and with NRC approval, the license could be extended. Source: NEI