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Long spans for radiation standards leave many cold

The way Yucca Mountain critics see it, the Environmental Protection Agency's proposed radiation standard for the nuclear waste dump is weak -- and will be even weaker 1 million years from now.

And therein lies their problem. Because while critics see this as a life-or-death issue, they are finding it difficult to arouse the public, in part because some of what is at stake will not become an issue for more than 10,000 years.

As the EPA comes to Las Vegas the second week of October to gather public comment on the proposed standard regulating radiation levels at nuclear waste repository, critics hope the fact that a part of the rule would not take effect until at least the year 12,310 does not prompt public disinterest.

In advance of the hearings, Yucca critics have complained that the EPA, told by a federal appellate court to rewrite its rule, simply presented a warmed-over version of the one the court threw out.

"We won a lawsuit, but there is no change" to the rule, Johnson said.

Yucca critics are not optimistic that this week's hearings will change that.

The Nuclear Regulatory Commission has already proposed an identical rule for its regulations.

Elizabeth Cotsworth, EPA's Office of Radiation and Indoor Air director, told a National Academy of Sciences panel earlier this month that the proposed rule, which limits the amount of radiation someone living near Yucca Mountain can be exposed to in a single year, was appropriate for pro-

tection. She said it allowed for no more radiation exposure than that of the natural landscape in Denver.

Like the old standard, the new one allows 15 millirem of radiation a year -- about the same level of annual exposure as a person would receive in an X-ray -- starting after the repository closes and lasting for 10,000 years. But the new standard adds a regulation for 10,001 years to 1 million years that increases the allowable dose 2,300 percent to 350 millirem.

The Energy Department will use computer models to prove to the commission that it can meet the standard, and the EPA will set up monitors around Yucca Mountain.

Judy Treichel of the Nevada Nuclear Waste Task Force, argues that the standard has nothing to do with protection, but rather was designed merely to allow the dump to be approved. The previous rule did not account for radiation beyond 10,000 years.

Treichel contends the new standard will leave future Nevadans more susceptible to cancer.

Critics also are troubled by the formula that the EPA used to create the dose recommendations. The formula calls for using an average to calculate the dosage during the repository's first 10,000 years; after that, the dosage is calculated using a median.

Writing in the publication *Science and Engineering Ethics*, University of Notre Dame professor Kristin Shrader-Frechette said such a standard shows that "even serious harms caused by negligence or unfairness could be sanc-

tioned if the rate of harm was below" the average.

She used, as an example, a hypothetical release that affected 715 people in a nearby town. She said if a "baby received a fatal dose of 10,000 millirems but all other residents each received 1 millirem, the mean dose would be under 15 millirems."

While such a scenario is unlikely, it shows the folly of the rule, she said. Under the EPA standard, after 10,000 years the dosage would be calculated using the median, meaning "limits would allow nearly half of exposures to exceed any standard," Shrader-Frechette said. That means in her theoretical town, 357 people could receive fatal doses of radiation if everyone else received 350 millirems or less.

Shrader-Frechette said the EPA's rule would allow radiation at 350 millirems a year -- slightly higher than the level that naturally exists in Denver -- an amount, she said, that causes about 3 percent of fatal cancers in the United States.

She said if the EPA permitted air polluters to follow similar logic, they could save money and "increase profits at the expense of the public, but claim that victims' health risks were acceptable merely because they were no worse than what some natural event had caused."

And that, critics say, is as much of a concern in 2005 as it perhaps will be in 12,310.

Source: *Las Vegas Sun*



Public comments on the proposed Yucca Mountain radiations safety standards extended to November 21st

FOR FURTHER INFORMATION

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EPA Docket Center (EPA/DC)

Air and Radiation Docket

Environmental Protection Agency, EPA West, Mail Code 6102T, 1200

Pennsylvania Avenue, N.W., Washington, DC 20460

Attention Docket ID No. OAR-2005-0083

Send comments by fax to:

202-566-1741

Attention: Docket ID. No. OAR-2005-0083



DOE plans appeal of order to release Yucca document

WASHINGTON -- The Department of Energy is preparing to appeal an order to make public a 5,000-page draft license application for Yucca Mountain, prolonging a legal fight over access to nuclear waste documents.

The order, issued last week by a panel of three administrative judges for the Nuclear Regulatory Commission, "raises in DOE's view complex and important issues" for the waste repository project, department attorneys said.

Attorney Donald Irwin filed a document with the judges this week saying an appeal would be filed early October.

Energy Department officials did not comment on the notice. DOE attorneys had argued the draft license application was legally shielded from disclosure, a

position that was rejected by the judicial panel.

DOE was challenged by the state of Nevada to post the documents onto



a pre-licensing internet site. State officials said they believe the documents contain important clues as to Yucca Mountain's safety for nuclear waste burial.

Public disclosure of the draft, which is said to contain versions of analysis reports and models that DOE will rely upon to defend the Yucca site during license hearings, also figures to give the state's at-

torneys a head start to form new legal challenges.

The DOE appeal will be decided by NRC commissioners. Commissioner Gregory Jaczko is expected to recuse himself because he worked on Yucca Mountain matters as an aide to Sen. Harry Reid, D-Nev.

A prolonged appeal could add "a couple months" before the Energy Department could move forward on Yucca Mountain licensing, said Charles Fitzpatrick, an attorney for the state.

"I think the (judges') decision was thorough and well-reasoned in every respect, but consistent with DOE's perpetual 'hide the ball' attitude, they will do everything within their legal rights to delay making the material available to the public in general and Nevada," Fitzpatrick said.

Source: Las Vegas Sun

EPA extends comment on Yucca safety

The Environmental Protection Agency has announced it will accept public comments on proposed Yucca Mountain radiation safety standards for an additional 30 days. The official comment period is being extended to Nov. 21, the agency announced in a Federal Register notice.

The EPA scheduled public hearings at Amargosa Valley on Oct. 3, and in Las Vegas on Oct. 4-6. A hearing in Washington will be held on Oct. 11. The agency is extending the comment period in recognition of "the high level of interest in Yucca Mountain." "It is important to

allow adequate time for public information to readily reach more rural areas," the EPA said.

Nevada leaders had lobbied for a longer comment period. The EPA in August proposed new radiation safety limits for the nuclear waste repository the Department of Energy plans to build at the site 100 miles northwest of Las Vegas.

The EPA proposed a unique two-part standard, with one set of limits for the first 10,000 years of repository operation and a second set for the succeeding years.

EPA will accept written public comment until November 21, 2005. To learn more about this action, visit: <http://www.epa.gov/radiation/yucca> or call 1-800-331-9477.

There are a variety of ways to comment on the proposed amendments to the standards. You can submit written comments electronically, via surface mail, by fax, by courier, or in person. You can also comment verbally during public hearings.

See address and phone numbers at left.

Source: Las Vegas Review Journal

Energy Department inspector general criticizes Yucca spending

The Energy Department paid incentive money to its managing contractor on the Yucca Mountain nuclear waste dump, Bechtel SAIC, even though Bechtel turned in late and low-quality work, an Energy Department inspector general report said on October 6th, 2005.

The inspector general questioned \$4 million in incentives paid to Bechtel for work on the planned Nevada dump from 2001-2004 - nearly 10 percent of the total \$43.4 million in incentives Bechtel received during that period.

"While the total cost of inappropriate incentive fee payments cannot be determined, we estimate that (the Energy Department's Office of Civilian Radioactive Waste Management) paid approximately \$4 million even though Bechtel delivered poor quality work and missed deadlines," said the report.

The criticism comes as Yucca Mountain, has suffered a series of setbacks. The government was forced by an appeals court to rewrite its radiation safety standard for the dump, and internal e-mails surfaced last spring suggesting government workers on the dump had falsified data. The dump's opening date has been repeatedly delayed and is now expected in 2012 or later.

Paul Golan, director of the Office of Civilian Radioactive Waste Management, said in a letter to the inspector general that he agreed with the report's findings and would take corrective action.

"We stand by the work we've performed under our contract. We take the report seriously and we're going to review it carefully," said Jason Bohne, spokesman for Bechtel in Las Vegas.

In one example, the report said Bechtel

was paid the full fee to develop a system for tracking management issues and corrective actions, even though the system was determined to be unacceptable because it was not user-friendly.

In another example, Bechtel was offered a \$2 million incentive for on-time completion of a "Licensing Support Network" that would post documents related to the development of Yucca Mountain on the Internet. The Energy Department determined Bechtel would not meet the March 2003 deadline, but instead of eliminating the incentive it used the money to create new and different incentives for Bechtel.

the total value of Bechtel's contract was \$3.2 billion; it was eligible for \$50 million in incentives and received \$43.4 million of which the inspector general questioned \$4 million. *Source: Las Vegas Sun*

Nevada files opposition to Yucca rail corridor land restrictions

The federal Energy Department hasn't laid the proper groundwork to justify restricting public land use along a proposed railroad corridor to Yucca Mountain, Nevada argues in a statement opposing the plan.

"It's poor planning and the wrong agency is in charge," Bob Loux, executive director of the Nevada Agency for Nuclear Projects, said Tuesday of the Energy Department plan to build a railroad to haul radioactive waste across the state.

Loux filed a seven-page letter Friday opposing the Energy Department proposal to withdraw 308,600 acres from public use across parts of Lincoln, Nye and Esmeralda counties.

"Apart from causing impacts and disruption to existing land users, the proposed action has the potential to negatively affect the environment, grazing allotments, mining and energy development activities, property values, the economy, important cultural resources and more," the state said.

The state also argued the Energy Department should let the Bureau of Land Management and the federal Surface Transportation Board conduct the needed studies, and called on the department to withdraw its assessment and conduct a full environmental impact study.

The department held public hearings in September in rural Nevada, and had received 30 comments on its proposal, Energy Department spokesman Allen Benson said.

The plan is to remove from public use a mile-wide swath stretching 319 miles, dubbed the Caliente Corridor. The Energy Department proposes to forbid new mining claims and prevent the BLM from selling property on the parcels that would be withdrawn for 10 years.

Federal officials have said current mining claims, grazing permits, water rights and public access would not be affected.

In its environmental assessment, the Energy Department projected mini-

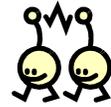
mal disruptions from the land withdrawal. It said engineers plan to photograph land features and conduct field surveys to narrow specific routes for the nuclear waste railroad.

No rail line currently runs to the site the Bush administration and Congress picked in 2002 to entomb 77,000 tons of high-level radioactive waste now stored at nuclear reactors and military facilities in 39 states.

The Energy Department announced in April 2004 that it intends to build the rail line from Caliente, a small town 150 miles northeast of Las Vegas, to the Yucca Mountain site, 90 miles northwest of Las Vegas. Department estimates have put the cost at \$880 million.

Arguments are scheduled Oct. 18 in the U.S. Circuit Court of Appeals for the District of Columbia on a state request to halt planning for the rail line until more studies are done.

Finding common ground



WASHINGTON -- Could it be true? Are Yucca Mountain's biggest opponent in the Senate and one of its biggest supporters working together on a nuclear waste bill that would shift the focus away from Yucca?

The trade publication *Energy Daily* reported on October 6th that Yucca's chief antagonist, Senate Minority Leader Harry Reid, D-Nev., and Energy Committee Chairman Pete Domenici, R-N.M., were discussing Reid's legislation that would require the Energy Department to take ownership of nuclear power plant waste and store it at the plants indefinitely.

The paper said another point of discussion may focus on the development of a U.S. reprocessing program, in which plutonium and uranium from spent nuclear fuel rods would be recycled to create new fuel, theoretically decreasing the amount of waste that would be stored at Yucca.

Reid spokeswoman Tessa Hafen said the senators are not talking about any specific proposals or bill language.

"I'm not sure where the rumors are coming from," Hafen said.

Reid has not yet introduced the legislation because he is securing support for it behind the scenes among his Senate colleagues. Reid aides point to Sen. Robert Bennett, R-Utah, who on Sept. 20 announced he was shedding his support for Yucca in favor of on-site storage, as an example that Reid's efforts are paying off.

Getting the support of Domenici would boost the bill's chances immediately and help the state in its fight to stop the plan to ship highly radioactive waste now piling up at the plants to the proposed underground repository at Yucca for permanent burial.

A Domenici spokeswoman declined to comment to *Energy Daily* and could not be reached Monday by the Sun. A spokesman in Domenici's New Mexico office was unavailable. Federal offices were closed for the Columbus Day holiday.

Industry officials say the nation needs a geologic repository whether it pursues reprocessing or not, and were reportedly uncomfortable that Reid and Domenici could be discussing legislation that would decrease momentum for Yucca.

Some industry officials at times have said that Yucca Mountain was important to their plans to construct a new generation of nuclear power plants.

A spokesman for the Nuclear Energy Institute, the industry's top lobby group and leading Yucca supporter in Washington, was unavailable for comment on October 10th.

Energy Daily reported that NEI chairman Adm. Skip Bowman sent a memo to nuclear industry insiders last week that said the potential for a Reid-Domenici bill was "not good news."

The publication reported that Bowman wrote, "We have been doing our dead-level best to stamp out this notion." He also wrote that leaving waste at plants could "completely dampen new plant enthusiasm."

The potential for an agreement in which the Energy Department would "take title" to the waste as it sits at the plants could actually benefit the industry, said nuclear waste specialist Kevin Kamps of the Nuclear Information and Resource Service.

NIRS opposes reprocessing because it is a "messy" process that poses environmental and worker risks, as well as weapons proliferation concerns, Kamps said.

If Congress decides to pursue reprocessing it could be bad news for Nevada because Yucca Mountain could be chosen as the reprocessing site, Kamps said. Yucca could potentially be a waste site for the reprocessing by-product as well as the plant site, Kamps said.

"Nevada could get a double whammy," he said.

Domenici made a cryptic comment after Bennett's announcement when the Sun asked Domenici about Yucca Mountain. "Yucca Mountain must remain alive," he said. When pressed to clarify the comment, he said, "I didn't say what it (Yucca) should be."

Reprocessing, though, would mean that nuclear waste would be shipped across country, which runs counter to arguments made by Yucca opponents.

Domenici has an interest in pursuing reprocessing technology because national laboratories in his home state stand to benefit from the research contracts, Public Citizen analyst Michele Boyd said.

But it's unlikely that any discussions between Reid and Domenici would yield a landmark agreement in the final weeks of the congressional session, largely because Domenici faces a complicated task in detaching his support from Yucca, Boyd said.

"Everybody's looking for an easy solution, and they haven't been able to find one in the last 50 years," Boyd said. "I don't think they will be able to find one this month, or next month."

Source: Las Vegas Sun

Warning Future Generations

Describing preliminary concepts for permanent warning monuments or markers on the mountain's surface will be part of DOE's license application to the Nuclear Regulatory Commission (NRC) for a proposed repository at Yucca Mountain, Nevada. The NRC requires that the monuments or markers "accurately identify the location of the repository, be designed to be as permanent as practicable and convey a warning against intrusion into the underground repository, because of risk to public health and safety from radioactive wastes."

Current concepts include both monu-



Artist's conception of one of the large warning monuments that also serve as information centers on the crest of Yucca Mountain after permanent closure of the proposed geologic repository.

ments and markers, but the designs will not be final for some time because they will not be approved by the NRC until shortly before the repository is to be permanently sealed and closed. Closure of the repository would be at least 50 years, and possibly up to 300 years, after the first waste is emplaced deep underground.

Design ideas for the monuments and markers have been drawn from a broad range of sources: Yucca Mountain's natural conditions, worldwide archeological studies, materials science, and verbal and symbolic linguistics. The monumental challenge is to address how warnings can be coherently conveyed for thousands of years into the future when human society and languages could change radically.

Current monument and marker concepts

The current concept calls for a redundant message system consisting of perimeter monuments, smaller mark-

ers, and larger monuments serving as information centers. They would convey information by an unnatural-looking design, the strategic placement and use of materials, and the use of many languages and symbols.

Perimeter monuments

A series of tall enduring monuments about 25 feet high would be placed along the site's perimeter as well as on and near the mountain's crest. They would be designed to be noticed and to endure natural events, even water from future floods or the build-up of sand dunes deposited by wind. The warning messages on the monuments would be inscribed in several languages as well as pictures and symbols. The languages that would be used are the six official languages of the United Nations: Arabic, Chinese, English, French, Russian, and Spanish. The messages may also be displayed in some simplified form of the sign language used by the hearing impaired. Linguists have recommended that a variety of picture symbols be used, including perhaps a unique international symbol for "nuclear waste repository."

These messages would be inscribed about 40 inches or higher above the ground's surface to prolong legibility. To better withstand corrosion and erosion, the monuments could be constructed from either granite or basalt. The messages must survive natural forces and remain legible and comprehensible as long as possible. Natural factors to be considered are abrasion from wind-borne particles, general surface erosion, and "desert varnish," a dark coating or polish often found on rock surfaces after long exposure in desert regions; desert varnish is typically caused by a buildup of iron and manganese oxides.

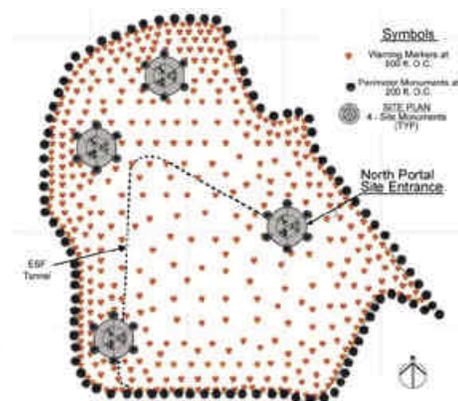
The shapes and dimensions of the monuments are also important factors. The current concept calls for the perimeter monuments to be six-sided cones pointing upwards at varying angles. As shown in the schematic drawing, they would rise out of the ground above the repository near the

larger monuments, as well as around the entire surface perimeter of the underground repository. They would be designed to be unnatural-looking so they would draw attention, but not be misconstrued as memorials of honor.

The schematic shows the approximate locations of the information centers or large monuments (4 large circles) and the perimeter monuments (small black circles) around the surface boundaries of the repository area. The smaller round circles with radiation symbols indicate the general locations of additional ground markers.

Smaller markers

Numerous nine-inch warning markers would be anchored into the ground and easily visible by a wandering human being. These markers would be designed as a redundant message system. To ensure the



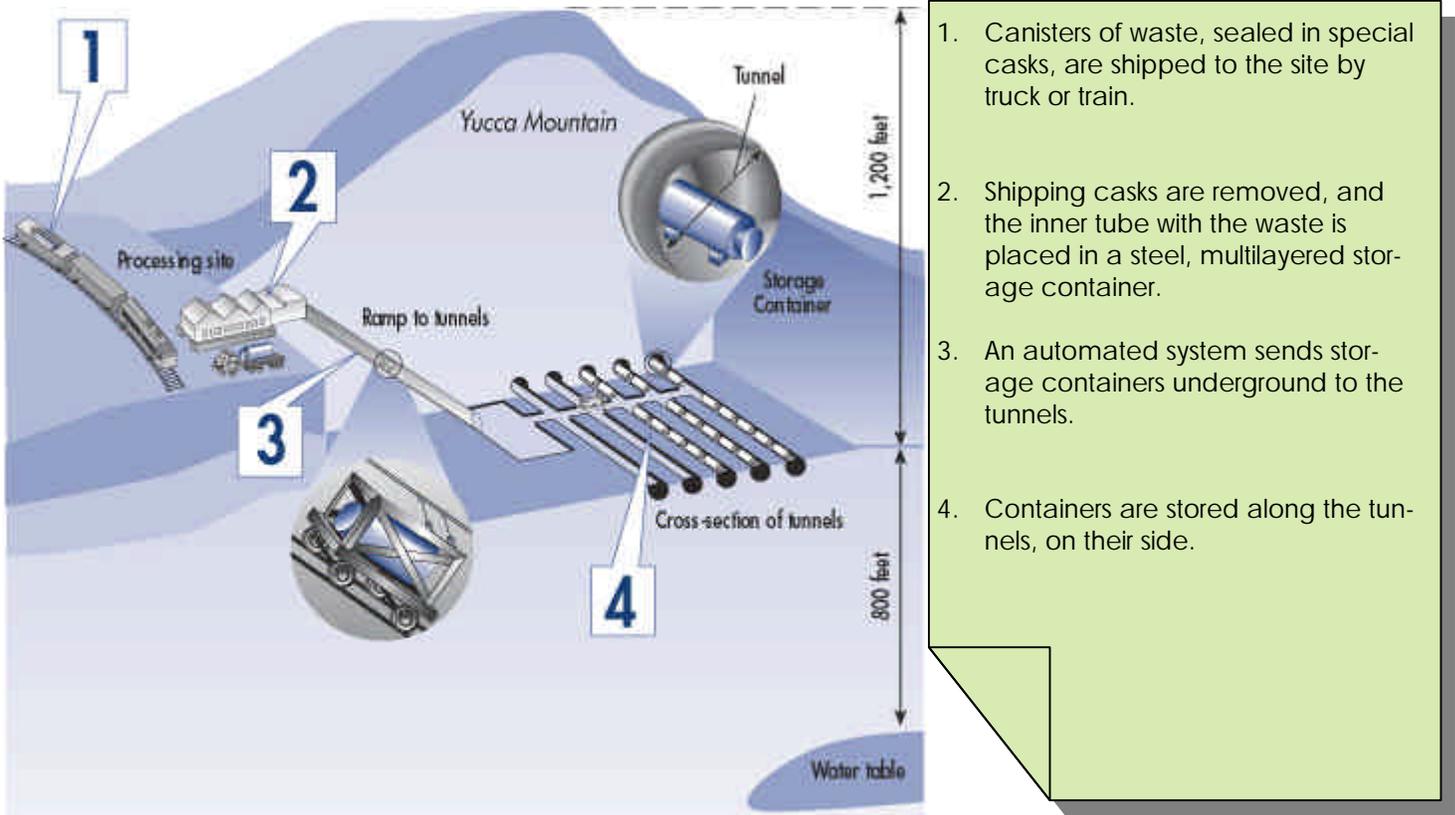
markers would last, they could be made of diverse durable materials such as granite, fired clay, and stainless steel. Each marker would display the international radiation symbol and one of the written messages.

Information centers

Several larger monuments would serve as information centers. They would likely be in the shape of the universal radiation symbol. The roofs of these monuments could include rock that is naturally yellow and magenta, the standard colors of the radiation symbol. The walls would carry the same messages in the same languages as the perimeter monuments. The information centers would also contain documents explaining and illustrating the repository, its location, its contents, and the worldwide locations of other copies of the same documents. At least one of the perimeter monuments would also contain this essential information.

Source: DOE—OCRWM website

Conceptual Design of Yucca Mountain Disposal Plan



Map showing the location of Yucca Mountain in relation to major highways; surrounding counties, cities, and towns in Nevada and California; the Nevada Test Site; and Death Valley National Park. Yucca Mountain is located on federal land in Nye county in southern Nevada, approximately 160 km (100 miles) north-west of Las Vegas.



Source: DOE

Aerial view of Yucca Mountain, looking south, showing the desert environment. The potential repository would be located about 300 m (1,000 ft) below the east-ern slope of the mountain.



For more information on Churchill County's program contact Churchill County Nuclear Waste Oversight Program at 85 North Taylor, Fallon, NV 89406, (775) 428-1592, www.churchillcountynwop.com. 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 contact them at www.ymp.gov, or the Nevada Agency for Nuclear Project, Nuclear Waste Project Office, Capital Complex, Carson City, Nevada 89570, (775) 687-3744 or visit them at their web site at www.state.nv.us/nucwaste