

EPA Sets A Million-Year Health Standard For Nuclear Dump

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By H. Josef Hebert
ASSOCIATED PRESS

WASHINGTON — No one knows what Earth will be like in a million years. But a proposed nuclear-waste dump in Nevada must be designed to ensure people living near the site a million years from now are exposed to no more than 100 millirems of radiation a year. And over the next 10,000

years, radiation exposure to the waste dump's neighbors may be no more than 15 millirems a year, or about what people get from an X-ray. People get about 350 millirems a year of radiation on average from all background sources. After three years of deliberations, the Environmental Protection Agency yesterday announced its radiation

regulatory Commission. The EPA has struggled to comply with a 2004 court directive that said it must establish a radiation health standard for a million years into the future because some of the isotopes in the buried waste will remain extremely dangerous for that long. An earlier standard of only 10,000 years was ruled inadequate.

quated by the court. The agency said yesterday it believed its latest standard met the recommendations of the National Academy of Sciences and was expected to satisfy the court decision. The Energy Department in June submitted its license request for the Yucca Mountain dump to the NRC, which has three years to consider the request.

Despite strong opposition from Nevada officials, the Bush administration hopes the site can be opened by 2020. It is designed to hold 77,700 tons of used reactor fuel from commercial nuclear plants in 31 states. The Energy Department has estimated a cost of \$96.2 billion of building and operating it for 150 years.

LIMERICK NUCLEAR PLANT - A NUCLEAR DUMP

**RADIOACTIVE WASTES AT LIMERICK
WILL REMAIN A HEALTH THREAT FOR A MILLION YEARS
EACH YEAR LIMERICK OPERATES,
THE DEADLY RADIOACTIVE DUMP GROWS**

Spent-fuel pool poses a danger, NRC says

It said water to cool rods was gone from one area, raising the threat of a meltdown.

ASSOCIATED PRESS

WASHINGTON — The chief of the U.S. Nuclear Regulatory Commission said Wednesday that all the water was gone from one of the spent fuel pools at Japan's most troubled nuclear plant. Japanese officials said it was impossible to be sure of that.

"There is no water in the spent-fuel pool, and we believe that radiation levels are extremely high, which could possibly impact the ability to take corrective measures," NRC Chairman Gregory Jaczko said.

If he is correct, it would mean there was nothing to stop the fuel rods from heating and ultimately melting down. The outer shell of the rods could also ignite with enough force to propel the radioactive fuel inside over a wide area, widening the potential reach of any nuclear fallout.

In testimony before a House Energy and Commerce subcommittee, Jaczko did not say how the information was obtained, but the NRC and Department of Energy both have experts in Japan.

The radioactive spent fuel rods at the center of the Unit 4 crisis are as dangerous as the fuel rods inside the reactor vessels of three other damaged plants — and possibly more so.

Unlike fuel rods in reactor cores protected by 6-inch-thick steel walls, the spent-fuel pools are considerably more vulnerable — located on the top floor of each reactor's containment building, without any extraordinary protection. Plus, the containment building of Unit 4 has a large hole in a wall.

'Greatest concern'

"For the time being, the greatest concern is the spent-fuel pools, because there is a clear pathway for release of radioactivity from the pools into the environment," said Ed Lyman, a physicist at the Union of Concerned Scientists, an activist group.

Fuel rods consist of a zirconium outer casing and highly radioactive uranium pellets inside. Experts say the casings of the spent fuel rods in Unit 4's pool have likely already overheated and cracked, allowing radioactive gases to vent into the air. That radiation is hindering the efforts to control the developing catastrophe at the reactor complex.

Officials have acknowledged that the cores of Units 1, 2, and 3 have begun to melt down, but no one has said the walls of the reactor vessels have been breached. Radiation has been leaking from the reactor structures, though.

Even at those units, the spent-fuel pools could spell an even more severe problem. Explosions at Units 1 and 3, which were operating at the time of the earthquake and tsunami, have left those spent-fuel pools exposed to the open air. The pools and those at Units 5 and 6, which also were shut at the time the quake hit, are also likely to be heating up.

Hotter fuel

Problems at Unit 4, which has been shut for months, began earlier this week with a fire sparked by its spent fuel rods. Its spent fuel is hotter and more radioactive than the fuel in the other reactors' pools because it had been removed from operations so recently.

If those rods are not surrounded by any coolant water, they would heat to the point they could ignite the metal casing that surrounds the rods. This would spew long-lived radioactive material into the air and onto surrounding areas.

The spent fuel in the pools contains more total radioactive material than the rods in the reactor, including a radioactive form of cesium that can contaminate a region for decades. This type of cesium, known as cesium-137, emits what is known as a hard gamma ray strong enough to penetrate human skin. "You don't have to breathe it in to be affected," Lyman said.

The release of cesium could render the area around a plant uninhabitable.

OUR VIEW

Spent fuel storage analyzed in wake of Japan nuclear crisis

The ongoing crisis in Japan has brought new fears and concerns about nuclear power plants into the spotlight and raised awareness of the fragile sense of security for those living near nuclear plants.

Those heightened concerns are certainly relevant in the Pottstown tri-county area, which matches the footprint of Exelon Nuclear's Limerick Generating Station's 10-mile-radius evacuation zone.

The disaster that has resulted from the earthquake and tsunami in Japan earlier this month has left the world reeling with disbelief at the extent of death and devastation. But it has also left the world questioning the safety and wisdom of generating power with a process that if gone awry can lead to horrific disasters all their own.

In the analytical fallout from the crippled Fukushima plant come questions and second-looks that could affect the future of nuclear plants here and abroad. The impact on Limerick is certainly top of mind for this region.

While the initial comparisons and analysis dwelt on the reactors themselves, focus has now shifted to the dangers of spent fuel and the continuing struggle in this country over what to do with it.

Spent fuel is a subject familiar to Limerick. In 2007, ground was broken on a spent fuel facility that takes older, colder fuel from the plant's spent fuel pool and stores it in a dry cask storage system. At the time it was built, that system was described by Exelon as temporary until the federal repository beneath Nevada's Yucca Mountain was completed.

But since then, the Yucca Mountain project has been scrapped, and scientists are now considering that the dry cask storage may be safer in the long run.

About 80 percent of the 63,000 metric tons of used fuel in the United States is currently stored in pools, including pools at Limerick. But most plants are now turning to dry cask storage for storage of rods going forward.

Made of incredibly thick steel and concrete, these casks hold the fuel that was used when the plants first opened and no longer need water to keep cool.

Although cooler, it should be noted that this fuel nevertheless remains radioactive for hundreds of years.

But the "temporary" solution to the problem of storing spent fuel may have a beneficial side effect.

Edwin Lyman, a physicist with the watchdog group the Union of Concerned Scientists, said recently that the casks may turn out to be safer than the fuel pools.

In addition to the closer analysis of spent fuel storage, the nuclear energy industry is also examining updated and more detailed analysis of seismic effects from natural causes.

Any threat, natural or manmade, is being looked at closely with an eye toward necessary precautions and safety alerts. Limerick was already due for a Nuclear Regulatory Commission review of susceptibility to earthquake damage as the result of new geologic data about the region. The Japan disaster made it even more timely and relevant.

Since the Japanese disaster, NRC has agreed to Obama's request to do a 30-day "quick look" review of all 104 U.S. plants as well as a longer 90-day review.

Also, Exelon has applied for an extension of Limerick's license. In 2009, it applied for the license for Unit 1, which entered commercial service in 1986, to be extended to 2024; and for Unit 2, put on line in 1990, to 2029. Limerick's license renewal does not seem to be in question, but the science which allows scientists and the NRC to assess the risk posed by earthquakes seems to be in flux.

The disaster in Japan raises new questions about nuclear plant safety and suggests points which should be emphasized as well as lessons to be learned. The fallout from this disaster is occurring on the other side of the world, but the long-term effects are closer to home — as close as the Limerick towers that shadow the towns of this region every day.

Limerick could end up a nuclear graveyard

"It's so highly radioactive, it will present a biological hazard for millions of years."

Paul Gunter, director of Reactor Safety Projects for the Nuclear Information and Resource Service

(WASTE from AI)
3-30-97

"Unlike nuclear waste, which slowly loses its radioactivity, much of this chemical waste remains hazardous forever."

But spent fuel administers a lethal dose of radiation within seconds. "It's so highly radioactive, it will present a biological hazard for millions of years," said Paul Gunter, director of Reactor Safety Projects for the Nuclear Information and Resource Service, in 1993.

Spent fuel must be shielded by lead, steel, concrete or purified water. Currently, the 30 tons of high-level waste Limerick produces annually is stored on site in underwater concrete vaults lined with stainless steel.

"You can put fuel in a pool and let it cool for a few years and then put it in a concrete cylinder and you ought to be able to walk away. All you've got to do is keep people away from it," says Boyer. "That shouldn't be impossible."

Yet the search for permanent disposal site is now in its fourth decade. Four years after the Nuclear Waste Policy Act of 1982 formally called for the government to build depositories, one nuclear physicist stood before the Atomic Industrial Forum and said he had lost hope.

"There's just too much opposition to these things," said nuclear physicist Victor Gilinsky. "Every state's going to fight it. Do you see any politicians standing up and supporting it?"

In 1987, Congress targeted Yucca Mountain in the Nevada desert for the depository, with a projected opening date of 2010. Critics say possible earthquakes and volcanic activity make the site unsafe. With Yucca Mountain plagued by licensing problems, the frustrated nuclear industry is petitioning judges and politicians to resolve the issue. "We've have led

"Every state's going to fight it. Do you see any politicians standing up and supporting a storage site?"

Victor Gilinsky, nuclear physicist

rocketed to the sun. The company's 1996 annual report admits, "It is not likely that a permanent disposal site will be available for the industry before 2015, at the earliest."

That would be a problem for Limerick, which will run out of on-site space in 2010. Yet MacFarland is optimistic. "Before that time, the federal government's going to have a repository for us," he says. "I firmly believe that."

Limerick will need one in Pennsylvania as well, for the 50 tons of dry, low-level radioactive waste it produces each year. Pennsylvania, West Virginia, Delaware and Maryland signed the Appalachian States Low-Level Radioactive Waste Compact in 1988 and hired Chem-Nuclear Systems to find a low-level waste site in Pennsylvania.

Nine years later, no municipality has offered to host the proposed 500-acre dump, despite a litany of financial incentives. "We're looking to have some volunteers by the end of this year or early in 1998," says state Department of Environmental Protection spokesman Michael Lukens.

But he admits, "It's a process that continues to be delayed. As far as a deadline, that really doesn't exist."

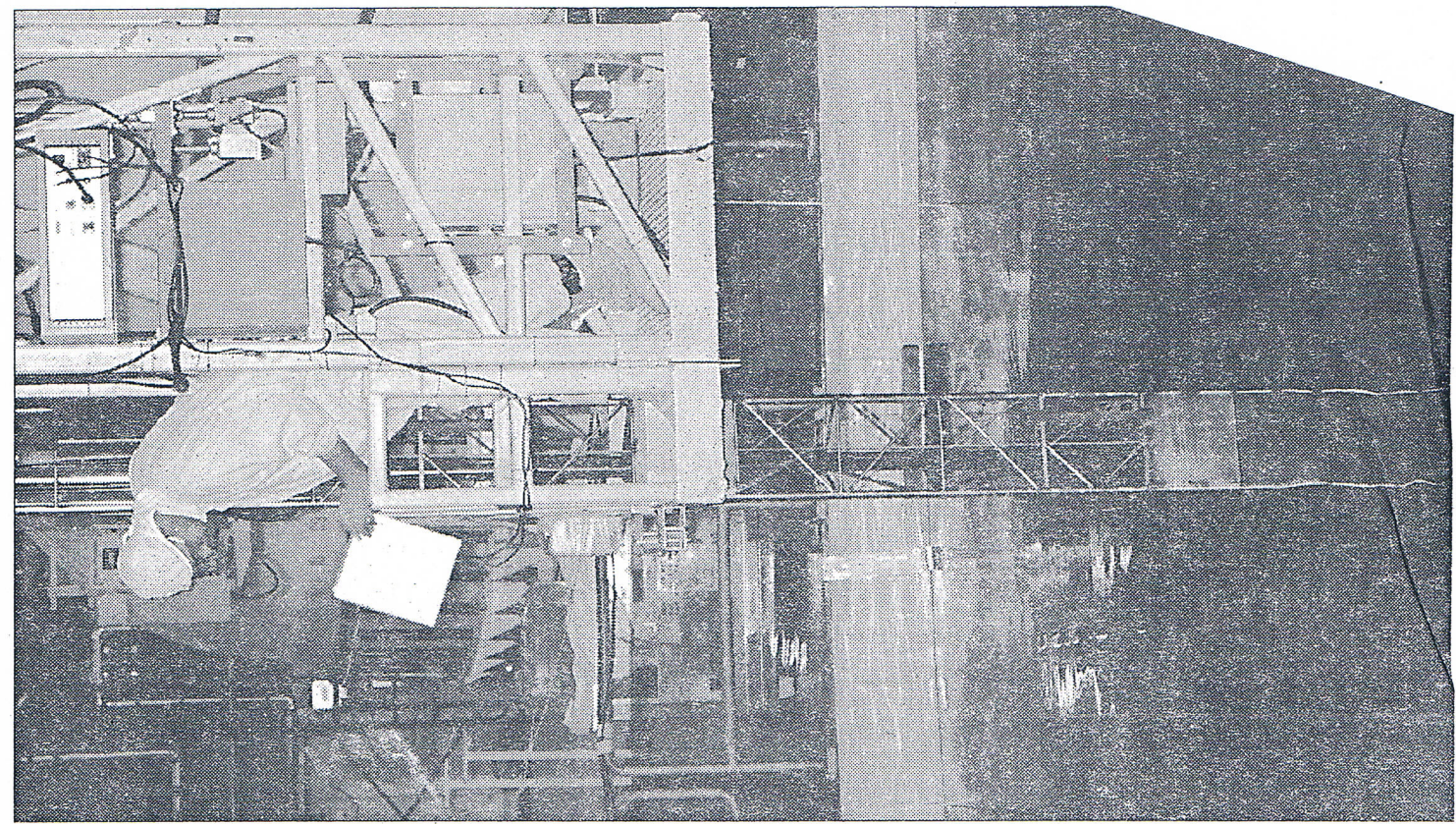
In the meantime, Limerick's low-level waste is shipped to a facility in South Carolina. If that state closes its doors - which it did in 1994-95, before re-opening them to fund school construction - Limerick would have to store its dry waste temporarily on-site.

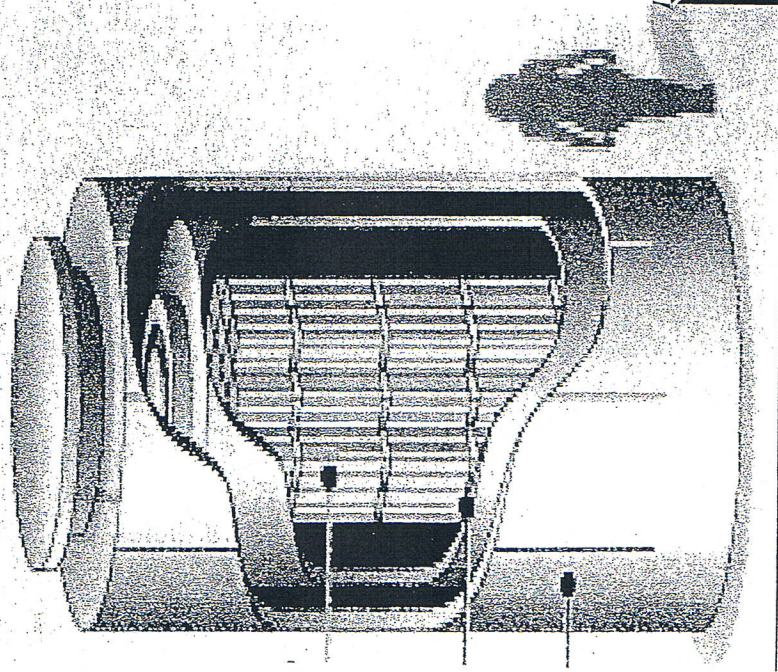
"Pennsylvania and the other states are held hostage to the will of the South Carolina legislature," says Chem-Nuclear spokesman Arnold Cushner, adding that on-site storage is not as safe as a permanent facility.

What waste dump be? Two thousand municipalities have been inducted

Mercury Photo by Kevin

A worker watches as a fuel rod is lowered into a pool of water at the Limerick Generating Station. Spent rods, which are decaying, are being stored in the pool.





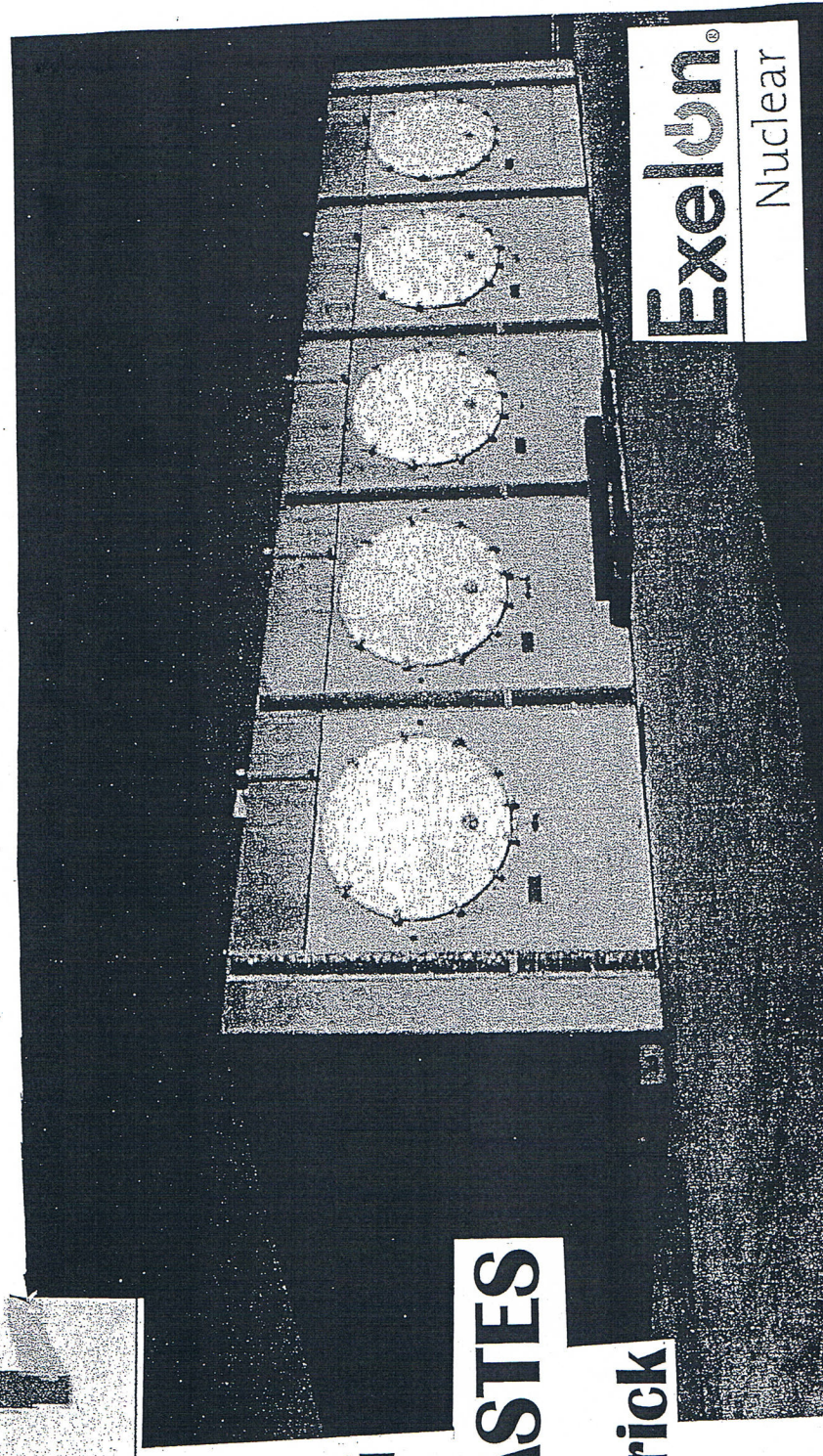
Easy Terrorist Targets

Limerick Nuclear Plant's

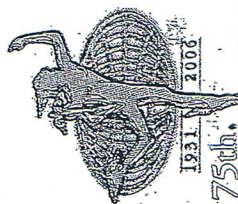
High-Level Radioactive Wastes

Stored Above Ground In Casks

INCREASING
DEADLY WASTES
Stored In Limerick



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The Mercury

Sunday

Pottstown, Pennsylvania

NRC: Dry casks not part of new 9/11 safeguards

By Evan Brandt

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LIMERICK — When it comes to building new nuclear power plants, the nuclear industry has asked that it be required to design plants that can withstand a 9/11-type attack by a hijacked jet.

When it comes to dry cask storage facilities however, the industry, the federal government and even one of the nuclear industry's harshest critics do not have the same concerns.

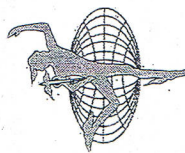
One such dry cask storage facility is planned for Exelon Nuclear's Limerick Generating Station.

On Dec. 8, the Nuclear Energy Institute sent a widely referenced letter to Dale E. Klein, chairman of the U.S. Nuclear Regulatory Commission.

The letter, as reported in The New York Times and the Associated Press, asks the NRC to be sure to require designs for new nuclear plants to be adequate to protect against "conditions that result from large fires and explosions that challenge core cooling, containment, or spent fuel pool integrity."

In a Dec. 25 Associated Press report, Nuclear

(See SAFEGUARDS on A3)



LOCAL

Pottstown wants more monitoring at nuclear plant

By Evan Brandt

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POTTSTOWN — The borough's environmental advisory council is taking another run at Exelon, trying to get the company to install additional monitoring at the dry cask spent fuel storage facility it will soon erect at the Limerick nuclear plant.

According to a draft of a letter to plant manager Christopher Mudrick, Pottstown intends to ask that constant, real-time temperature monitoring be conducted at the cask site.

On Nov. 16, Mudrick rebuffed a September request by Pottstown that additional, real-time radiation monitors be placed around the dry casks to provide extra protection in the event of a release of radiation.

Mudrick wrote that the radiation monitors are "in place" and checked routinely by plant personnel, but the information on the monitors would not be routed to a "central control center" as Pottstown had requested.

Now the borough is making the same request, but this time for temperature monitoring.

During presentations Exelon made on its dry cask plans, "emphasis was placed on the fact that the casks are kept sufficiently cool by the passive air flow through the facilities housing the casks," the letter reads.

"The presentation also indicated that the warming of the temperatures outside the cask could be an indication of problems within the cask," the letter continues. "Since a fluctuation in the external temperatures could be an indication of two possible issues, we do not understand

why constant monitoring of the temperature would not be deemed to be just as important as constant monitoring for radiation."

Added the letter, "we believe that the cost of such a system would be relatively modest."

Elizabeth Rapczynski, a spokeswoman for Exelon, said she could not comment on a letter the company has not yet officially received.

Pottstown Borough Council voted unanimously Jan. 8 to send the letter once it has been reviewed by Borough Solicitor Charles D. Garner Jr. and Borough Manager Ray Lopez.

The dry cask storage casks are being erected at the Limerick plant because the spent fuel pool located inside the reactor building is reaching its capacity.

The casks are officially considered a temporary solution until the nation's spent fuel repository

tory beneath Nevada's Yucca Mountain is completed.

However, one by-product of the Democratic take-over of Congress in November was installation of Yucca Mountain opponent, Sen. Harry Reid of Nevada, as the new Senate Majority Leader.

That, and the fact the project is embroiled in financial and scientific controversy, has many to note that the dry casks should be considered as permanent installations since they may well reflect the reality of the situation.

That is a view strongly disputed by the nuclear industry, which points out that the federal government has a legal and contractual obligation to take possession of the spent fuel — which remains radioactive for centuries — as well as responsibility for its permanent storage.