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FROM THE NEVADA STATE RECORDER 7/9/85 Vol. 11 #27

Professor: Nevada Can Make Billions From Nuke Dump

A UNR physics professor says Nevada can make more than \$100 billion reprocessing the high level nuclear waste the federal government apparently plans to store at Yucca Flat in southern Nevada. Dr. James Kliwer contends that Nevada can reprocess the waste and turn it into nuclear reactor fuel for both foreign and domestic markets.

Kliwer plans to present his idea to the legislative study group investigating implications of placing a nuclear dumpsite in Nevada. But Bob Loux, of the Governor's Nuclear Waste Project Office, said this week the legislative study committee has

already been briefed on reprocessing. "The Governor doesn't believe in building an economy around nuclear waste, it's not sound economic development," Loux stressed. He noted

reprocessing of nuclear waste in 1977 because of what are perceived to be the dangers of "proliferation." The feds feel the procedure would allow terrorists and non-nuclear

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that currently "the bottom has fallen out of the uranium market," and reprocessed fuel is three times more expensive than uranium taken directly from mines. Loux also pointed out that the federal government banned

nations to obtain the makings of nuclear weapons, Loux said.

But Kliwer thinks if Nevada is going to be stuck with having the nation's nuclear waste repository

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Professor

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within its boundaries the state should look at world energy needs over the long term. He notes that the nuclear waste to be shipped to Nevada, if Yucca Mountain is the designated site, will be the energy equivalent of about 4½ billion barrels of oil. "At \$30 per barrel, that's \$140 billion, Klierer points out. France, Britain, and West Germany all have very ambitious nuclear power programs designed to make their countries energy self-sufficient. Currently these countries reprocess their used fuel, but reprocessing is not economically feasible for most countries. In the rest of the world, the "fuel cycle", which is the entire process from mining uranium to disposal of the byproducts, does not include reprocessing. But most nations are leaving the option of reprocessing open for reconsideration at some future date. Future energy needs, as well as waste disposal problems, could create increased pressure in this direction, Klierer said.

The federal government's plan for a national nuclear repository includes the possibility that the waste will be reprocessed at some point in the future. But Bob Loux said the law also specifies that the federal government will own the material." The Department of

Energy would never turn over ownership of nuclear waste to the state of Nevada," Loux said. "They feel it's a national treasure."

And Loux foresees another problem. He says Nevada's investigations of the Yucca Mountain site indicate that it will not be a good place to store fuel with the idea of retrieving it later. "Yucca Mountain is comprised of highly fractured volcanic rock. The waste will heat the rock up to 100 degrees F. and will facilitate geologic instability," Loux argued. Movement of the underground tunnels where the waste is stored will "make retrieval" impossible" according to Loux. To support this contention, he noted that heat from nuclear material used in power plants "makes steel and concrete so brittle it cracks in 30-40 years."

A Nuclear reactor uses less than three percent of the uranium in its fuel rods. If any more is used, the rods rupture and can contaminate the reactor. As a result, when a fuel rod is "spent," it still contains most of its fuel, though not in a useful form. The waste is considered by some to be even more valuable than the original uranium. The process of nuclear fission creates plutonium, a much more efficient fuel than uranium, according to Klierer.

The repository that would be built at Yucca Mountain is called a "dry storage" facility where waste in sealed containers can be monitored for leakage and for effects of long-term storage. Most temporary

storage facilities in existence now are "wet storage" pools where the waste is shielded by water. Federal law calls for the nation's nuclear waste repository to be left open for fifty years following its construction. Presumably this will allow for retrieval of the fuel rods not only for reprocessing purposes but also for access in case a superior method of storage becomes available.

Right now, according to Nuclear Engineering International, utilities that operate nuclear reactors in the United States have stored around 11,000 tons of used nuclear fuel on their premises. By 1998, when the U.S. Government plans to take title to used fuel and dispose of it, the United States will have to find places to store 40,000 tons.

The dry storage facility proposed for either Nevada, Washington or Texas will be able to store up to 70,000 tons of used fuel. Klierer says there are two such facilities planned and he notes that each of the three states in the nuclear waste dump lineup can figure odds of -3 that all those tons of radioactive fuel rods will end up in its backyard.

Dr. Klierer said this week that Yucca Mountain, the southern Nevada nuclear waste site candidate, "looks pretty good. I'd say there's about an 80 percent chance they'll stick one there. It's academic to talk about not having it."

With this conviction in mind, Klierer set out to see what it was good for." He feels Nevada should start to establish the groundwork for reprocessing the fuel and make the best of what many think is a bad situation.

There is nothing short-term involved in a Nevada reprocessing project. The facilities for such a project alone would be huge and expensive and any investment would take decades to pay off. And Bob Loux points out that reprocessing spent nuclear fuel "requires massive quantities of water," which is almost non-existent at Yucca Mountain. Loux said the liquid waste which is generated as a byproduct of reprocessing has been a "disaster" in other areas. South Carolina has swamps full of radioactive water left by a nuclear reprocessing project undertaken there, Loux stressed.

But Klierer argues that nuclear power will one day be the mainstay of the world's energy generating capacity. "you can't make power plants that use oil and gas anymore," he says, "and you know why? Because there isn't any oil and gas." And, he notes, the national energy act of 1979 now prohibits the construction of oil/gas-fired plants in this country."

Right now 12 percent of our electricity comes from nuclear power plants," says Klierer. He said a new one, number 87 in the United States, just opened in Mississippi with capacity to generate 1,250 megawatts. The Valmy coal plant generates 250 megawatts. Valmy also burns 700 tons of coal an hour, "or 1.7 million tons a year." Klierer notes such a system has serious limits in the future.

The physics professor argues that nuclear energy is the only viable alternative to meet what he thinks will be the large scale energy needs of the modern world. "I don't know where else you're going to get that kind of energy. I don't know of any technologically feasible unlimited source of energy available," Klierer said. He even dismisses solar energy, which many futurists and economic development specialists

predict will be Nevada's future energy ace. "You can't build a 1,000 megawatt solar plant. We don't know how," he says.

Although fuel is the major

state to lay the groundwork to take advantage of any advantage that exists.

"I'd like to bring to the attention of the state what the potential

But Bob Loux feels it is premature to jump to the conclusion that Nevada will get the waste site. "I'm not sure we're stuck with it yet," Loux stressed. And he said if Nevada does find that it's stuck with the nation's nuclear garbage the state could ask for compensation that is less speculative and more immediately useful than reprocessing rights, such as \$500 million in cash.

"Nevadans have to make a conscious decision. 'Do they want to make a living opening their arms to waste disposal?' Loux asked. "That decision should not be made by default," stressed Loux.

"NEVADANS HAVE TO MAKE A CONSCIOUS DECISION' DO THEY WANT TO MAKE A LIVING OPENING THEIR ARMS TO WASTE DISPOSAL?"

direction reprocessing would take, there are other kinds of byproducts that can be derived from fuel rods.

Among them is Cesium-134, a radioactive element at least one scientist thinks can be used to preserve food. Dr. Manuel Solar of the University of California, Davis, is spearheading a study using Cesium 134 to irradiated food, which he thinks will enable mankind to dispense with preservatives and refrigeration. In the medical field, radioactive elements are used frequently and these, too, exist in spent fuel.

Kliwer said he envisions that Nevada's universities could have labs at the site of a reprocessing plant. Among the advantages he sees is the fact that engineering students could study robotics at the site, because robotics would play an important role in reprocessing the waste.

One of the unanswered is the question of who would build a facility of the magnitude required to reprocess the nation's nuclear waste. But Kliwer says, "When you have a hundred and some odd billion dollars lying around, someone will help you do that."

"People worry about the dangers of nuclear waste and for good reason. Kliwer says, "But it's mostly because people don't know anything about it." He acknowledges there are dangers associated with anything having to do with nuclear power. "I would like to see the state have some control. I agree with the governor that the federal government uses Nevada as a trash heap." But since Kliwer sees a repository as inevitable, he says "I want the

is way down the road. Maybe the state could say to the Department of Energy, 'yes, but here's what we would like.' Kliwer observed. "I think the state needs to know what it might have, otherwise the DOE could sell it anything."