

Power supply depends on Yucca Mountain

Much has been presented on Yucca Mountain, the nuclear repository, but one very critical and important tidbit has been left out.

I worked in high-level nuclear waste for Babcock & Wilcox. A nuclear-fuel assembly is made up of hundreds of fuel rods about half an inch in diameter and 12 feet long. Each reactor core is composed of hundreds of fuel assemblies. A fuel assembly is periodically relocated in the reactor core during a "cycle outage," when about a third of the core is off-loaded and placed in a spent-fuel pool, where it is allowed to "cool." This fuel is no longer economically viable to the company and will stay in the pool until the Department of Energy removes the fuel assembly.

The problem no one seems to realize is that the spent-fuel pool has a finite size. It can hold only so many fuel assemblies. When the pool has no space left, the reactor must shut down. A reactor has a license to operate 40 years, but because DOE had a contractual agreement to remove the fuel starting in 1998, utilities saw no reason to build spent-fuel pools capable of holding 40 years worth of spent fuel assemblies.

B & W prepared a report on each reactor in the U.S. This report calculated when each reactor would run out of spent-fuel space and be required to shut down. Within the next five to 10 years, nearly every one of the U.S. reactors will

be required to shut down unless spent fuel assemblies are removed from reactor sites.

What does this mean to you? Nuclear power accounts for about 24 percent of total U.S. electrical generating capacity. What do you think will happen when 24 percent of this generating capacity is taken off line? Brownouts, blackouts and much higher electrical costs. How long do you think it takes to approve permits and build a replacement power plant? California's energy problem will look mild if we do not act quickly.

Time is fast running out. Numerous utilities have filed suit against the DOE for breach of contract in not taking spent fuel assemblies. The costs to taxpayers could be extremely high. Utilities are seeking recovery of lost operating revenues and reimbursement of costs for alternative storage for spent fuel assemblies.

President Jimmy Carter's decision not to reprocess spent fuel and reduce nuclear-waste volume dramatically was the incorrect decision. Reprocessing nuclear fuel would reduce volume to a very tiny fraction of what remains to bury. Burying nuclear spent fuel is akin to filling a 20-gallon gas tank, consuming a cup of it and then burying the gas tank.

I was asked to help design the storage cask for spent fuel back in 1994.

The criterion for this container was that it could not leak for 10,000 years. How do you test

this? I have seen tests on shipping casks and some of the results. I have no fear in shipping spent fuel assemblies by rail or truck. Shipping containers go through rigorous multiple-drop tests of 30 feet onto steel posts, fire tests and impact tests, all using the same cask. They cannot leak after any of these tests. I would love to have a car built as well as these, for they do not leak even in train wrecks.

As for terrorists trying to use the material inside, good luck. If they do open up the cask, you will be able to identify them, and you will know how they died soon enough.

This material is highly radioactive, and, depending on design, there are extra precautions to follow in handling. There are very few places where spent fuel could be removed from the shipping cask safely.

Opening Yucca Mountain is the correct thing to do from an engineering, safety, environmental, logistics, economics and political standpoint.



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