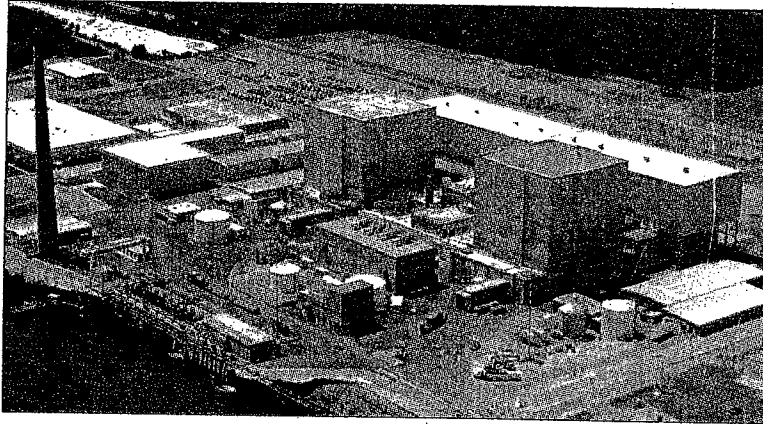


Local plant may store more nuclear waste



By Millard K. Ives
Staff Writer

The Brunswick Nuclear Plant in Southport wants to build a dry-cask fuel-storage facility to hold more nuclear waste.

Progress Energy, which operates the plant, has begun asking for bids from companies to construct the facility on its grounds near Southport. It will likely be built in 2005 or 2006, and the waste would be held there until a proposed nuclear repository is constructed in Nevada, said Mike McCracken, a spokesman for the nuclear plant.

The plant must receive a license from the Nuclear Regulatory Commission before construction on the dry storage

The Brunswick Nuclear Plant near Southport is seeking permission to store spent nuclear fuel rods in a dry storage facility.

STAR-NEWS FILE

Star News 4/29/03

SEE WASTE | 4A

QUICK FACT

Since 1986, more than a dozen U.S. plants have supplemented their storage capacity by building above-ground, dry storage facilities.

WASTE

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facility could begin. Dry storage is a proven technology that has been used in the industry for about 30 years, Mr. McCracken said Monday.

"It will be a safe and reliable method of storage until a more permanent waste storage site is developed," Mr. McCracken said.

It's not clear how large the dry storage facility would be, how much nuclear material it would hold or what the estimated cost would be.

In a dry-cask fuel-storage facility, radioactive material would be pulled out of the plant's current cooling pools and placed into storage containers made of steel several inches thick. The storage containers would then be placed in a concrete vault within the storage facility. Eventually, the cylinders would be transported by the U.S. Department of Energy to Yucca Mountain, a proposed nuclear repository in the Nevada desert.

DOE officials are in the process of obtaining a license for the repository from the Nuclear Regulatory Commission.

The repository could open as early as 10 years from now.

The Brunswick plant, which began commercial operation in 1975, uses uranium fuel to produce electricity.

After its use, the fuel is placed into a wet storage facility for at least five years.

A spent-fuel pool is about the size of a couple of two-car garages. Water is used to cool the fuel until it can be safely removed. Due to space limitations in the plant's spent-fuel pools, plant officials began to ship spent fuel to the Harris Plant storage facility outside Raleigh in 1986.

But space there will also eventually fill up, Mr. McCracken said. "We aren't in a crisis, but this is the time to start looking at other options," he said.

Nuclear waste is safe to the public whether it's sitting in cooling pools or in dry storage, Mr. McCracken said, but it would ultimately be safest in a long-term repository.

"On-site storage of used nuclear fuel is safe and secure, but it was never meant to be permanent," he said.

By 2004, about 30 power plants across the nation will run out of storage space in the ponds used to cool and store used nuclear fuel, according to the Nuclear Energy Institute, an industry trade group.

Although storage at Yucca Mountain has received some opposition, including from Nevada representatives in Congress, Mr. McCracken said he doesn't expect a lot of local opposition to the facility.

"We have earned a good reputation," he said. "The nuclear industry has a perfect safety record on storing and transporting nuclear fuel with no impact to public health and safety."

Jan Harris, president of the Brunswick Environmental Action Team, said she wasn't clear yet on what problems, if any, expanding the facility would create, but added she does have some concerns.

"It's something I would investigate," she said.

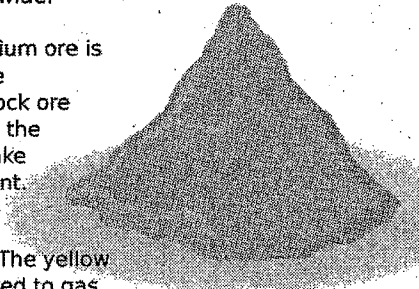
Plan generates heat

Star News 5/4/03

The Brunswick Nuclear Plant and its dual reactors supply about 25 percent of the electricity used by area customers. The uranium vital to power production follows an involved path. Utility officials hope to temporarily store some of the radioactive waste in dry-cask canisters until the federal Yucca Mountain repository begins accepting material. Nuclear plants are designed to store at least 10 years' worth of used material, according to the Nuclear Energy Institute.

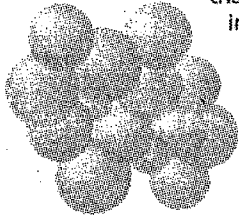
① **Mining** - Uranium ore is mined from deposits worldwide.

② **Milling** - Uranium ore is separated from the remainder of the rock ore and is packaged in the form of a yellow cake powder for shipment.

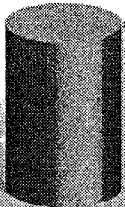


③ **Conversion** - The yellow cake is converted to gas.

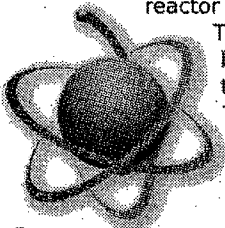
④ **Enrichment** - Uranium consists of two isotopes that are chemically indistinguishable and must be separated by a physical process. The gas is placed in a spinning cylinder, the first of hundreds of steps starting the physical separation.



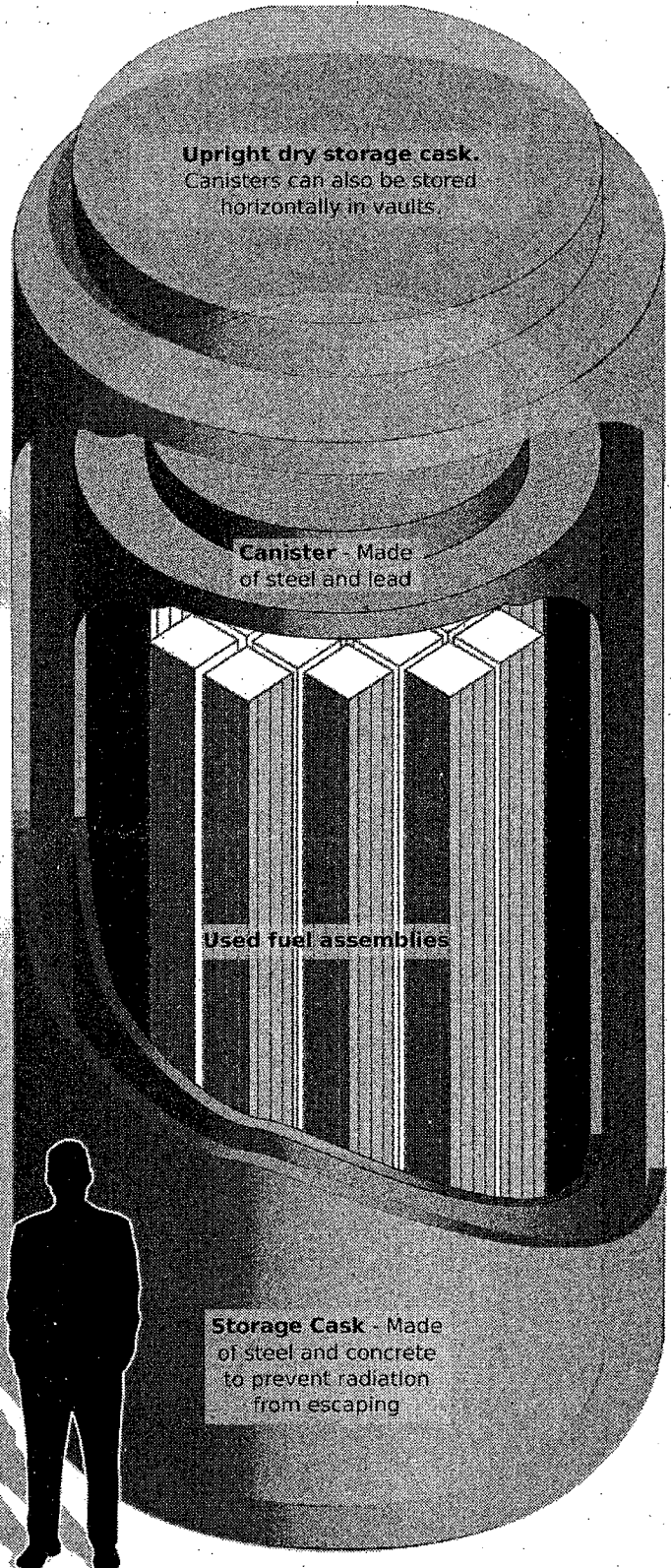
⑤ **Pellets and assemblies** - The gas is processed into ceramic fuel pellets for insertion into long metallic rods that hold the pellets in a column. Many rods are then joined together into a fuel assembly, which is then ready for insertion into the reactor.



⑥ **Nuclear energy** - The fuel assemblies in the reactor are bombarded with protons. This causes the rods to heat boiling water that spins huge turbines producing electricity. The fuel assemblies are used for four to six years.



⑦ **Wet storage** - After the assemblies are used, called spent fuel assemblies, they are placed into a wet pool beside the reactor and stored for five years.



Upright dry storage cask.
Canisters can also be stored horizontally in vaults.

Canister - Made of steel and lead

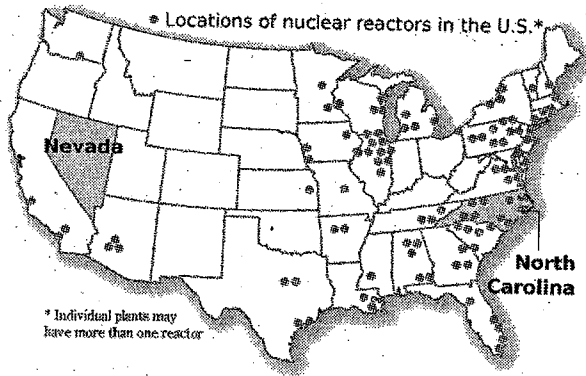
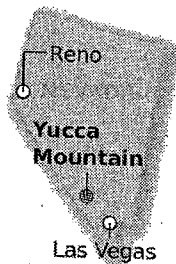
Used fuel assemblies

Storage Cask - Made of steel and concrete to prevent radiation from escaping

8 Storage - Currently, the spent fuel is sent to the Shearon Harris Nuclear plant in Wake County to be stored. Officials at the Brunswick plant want to build dry storage facilities at the plant to store spent fuel assemblies.

9 Yucca Mountain - Officials hope to send materials to Yucca Mountain, Nev., when it opens.

SOURCES: Progress Energy, Nuclear Regulatory Commission, Nuclear Energy Institute



STAFF ART | STEVEN PIPES

Progress Energy explores storing spent fuel at Brunswick plant

By Ken Little
Staff Writer

Steel canisters full of spent fuel will likely dot the landscape at Brunswick Nuclear Plant for years to come, if plans by operator Progress Energy Service Co. move forward.

With political wrangling bogging down the opening of a long-term home for high-level radioactive waste at Yucca Mountain, Nev., there are precious few other options.

"We're in the exploratory stage on this. We're quite certain we're going to go to dry storage," Progress Energy spokesman Mike McCracken said.

Even those critical of the nuclear power industry believe the "dry-cask" fuel assembly storage method is preferable to housing the material on site in spent fuel pools, provided certain precautions are taken.

But watchdog groups have some misgivings about the outside storage concept when the realities of a post-Sept. 11 world are considered.

"We're still interested to see what kind of dry storage they're talking about," said Jim Warren, spokesman for the N.C. Waste Awareness and Reduction Network. "You don't stack the canisters out there all next to

SEE NUCLEAR | 10A

Dry storage idea draws mixed views from area residents

By Millard K. Ives
Staff Writer

While opinions vary on the Brunswick Nuclear Plant adding a dry storage facility to supplement its spent fuel capacity, some say they think it will help erase concerns about shipping radioactive materials through and out of the county.

Randy Thompson, Emergency Services director for Brunswick County, said the dry storage would allow his department to concentrate more on nuclear waste on the plant's grounds.

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NUCLEAR

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each other where they can be attacked. They need to store it in hardened, dispersed dry canisters."

About 15 utilities in the United States use outside dry-cask storage in combination with spent-fuel pools. The Brunswick plant, near Southport, has shipped its fuel assemblies in sealed containers by train to Shearon Harris, a Progress Energy nuclear plant in Wake County, for 14 years. The utility's Robinson Nuclear Plant in Hartsville, S.C., also transports material by rail to Harris.

Even with four spent-fuel pools and only one reactor, the Harris plant's capacity to accept Brunswick's radioactive waste will eventually be exhausted, possibly before the federal Yucca Mountain site is available. The earliest projected opening date for the facility is 2010, and that isn't likely.

"It will be at least 10 years," Mr. McCracken said.

Progress Energy plans to file with the federal Nuclear Regulatory Commission to renew the operating licenses of Brunswick units 1 and 2, adding 20 years to the life of each reactor. If the request is granted, both plants would generate spent fuel into the mid-2030s.

Mr. McCracken said the location and type of the dry-cask storage containers hasn't been determined. Most are made of steel with an inner shell of concrete and contain bundles of used fuel assemblies, which in turn hold fuel rods full of uranium pellets.

"That's considered a safe method of dry fuel storage. They're viewed as temporary measures," NRC spokesman Ken Clark said. Materials at the federal Yucca Mountain site would be handled and packaged at a surface facility and moved through shafts and ramps to a storage area 1,000 feet under ground.

Progress Energy will apply by next year for NRC approval to bring in the dry-cask storage containers, which it hopes to begin using by 2005 or 2006. The Robinson plant already has eight horizontal-type dry storage containers holding a total of 56 fuel assemblies.

"At the time the (Brunswick) reactors were built, it was assumed the federal government would have a repository facility," Mr. Clark said. "From a safety standpoint, the NRC position is dry cask or independent spent fuel storage is a good way to store the fuel."

But the potential for natural disasters takes priority when dry storage facilities are planned, said David Lochbaum, a nuclear safety engineer with the Cambridge, Mass.-based Union

of Concerned Scientists.

"They never have been designed with acts of terrorism in mind," he said. "We could do a little better, even if it means just an earth berm."

Mr. McCracken said dry-storage canisters are tough enough to withstand airplane crashes and terrorist attacks.

"There's not much that can be done with something that can't explode and is in a locked concrete vault," he said. "This stuff sits there in the yard and it's just storage. There's no moving parts. Nothing can happen to it."

Many European nuclear plants protect the storage containers with earthen berms or concrete bunkers, Mr. Warren said.

He and Mr. Lochbaum said storing the radioactive assemblies in a spent-fuel pool is of far more concern, along with the transportation issue.

"Our bottom line is the high-density pools they have at all the plants are far too dangerous. If the water drains out of those pools, the spent fuel reacts with air and it's going to burn," Mr. Warren said.

Mr. McCracken's response was pointed.

"It is very unlikely it could burn even in a worst-case scenario. In the history of nuclear power in this country, there's never been an incident involving spent-fuel pools," he said. "It's about as remote as it could be."

Sealed containers of spent nuclear fuel are shipped about 10 times yearly on railroad cars from Brunswick and Robinson to Harris. The route and timing of each shipment is kept secret, and adequate security is provided, Mr. McCracken said.

Progress Energy is the only domestic utility to transport spent fuel from one plant to another.

"We don't think they should be shipping this waste anywhere," Mr. Warren said. "We believe the transports are virtually unprotectable and we believe the plants are virtually unprotectable from all types of attacks."

The terrorism threat has been studied, Mr. Clark said.

"The NRC has evaluated the circumstances, and the staff's evaluation is that security measures are adequate to protect (shipments)," he said.

All factors considered, dry-cask storage of spent fuel at the Brunswick plant is the best possible option available, said Thelma Wiggins of the Washington, D.C.-based Nuclear Energy Institute, the policy arm of the industry.

"We feel it's viable and it's safe. Even spent-fuel storage in pools on site is safe," Ms. Wiggins said.

Ken Little: 343-2389

ken.little@wilmingtonstar.com

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REACTION

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"We would no longer have to contend with the transportation issue of the spent nuclear fuel in other areas of the county," Mr. Thompson said.

The spent fuel is currently stored in cooling pools for about five years. Afterward, it's shipped to the Harris Plant outside Raleigh, which is filling up fast, said Mike McCracken, a Brunswick plant spokesman.

In a typical shipping cask, the solid, used fuel rods are sealed in a stainless steel cylinder, then encased in heavy-metal shielding, plus two more layers of steel.

The casks measure about 5 feet in diameter and 17 feet long and are shipped by train.

Accidents, while rare, do occur, according to officials with the Nuclear Energy Institute. The institute's Web site says there have been eight accidents, but no radiation leaks, involving fuel containers since 1964.

"I would think expanding the storage would eliminate the risks of shipping it," said Jennifer Williams, a dentist whose office is next to the plant grounds.

"This way, it (waste) can be kept more in one place," she said.

Donna Crump partly agreed. "It's like a catch-22 situation.

We're taking out some of the danger by shipping it out, but we are still keeping it here," said Ms. Crump, who has lived in Southport for 14 years.

Faye Jacobs Hollins, who works at Doshier Memorial Hospital in Southport and lives in Winnabow, said she trusts Progress Energy to do the right thing.

"If they (plant officials) said the dry storage is of benefit, I agree," she said. "From what I've seen, they are very careful up there. I don't think they would jeopardize any of our lives."

Most residents questioned said they just weren't equipped with enough information on dry storage to comment. Southport city officials plan to meet with plant representatives this month to discuss the addition.

The plant is located in County Commissioner May Moore's district.



County Commissioner May Moore says she's concerned, but won't jump to any conclusions about the plan.

"I'm concerned. But until I'm well informed, I can't jump to any conclusions," Ms. Moore said.

Mr. Thompson said his crew would have to revise its emergency plans to include the dry storage facility.

Not everyone questioned was happy with expanding the storage.

"I just think they need to get rid of the plant altogether," said Talmadge Hagley, who owns Bent There-Back junk yard. He is worried about the health effects of living near a nuclear plant.



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Mindy Nathanson, a member of the Waste Awareness Reduction

Network, said she has heard of accidents with the storage and shipping of waste, but dry storage should cut down on the risks associated with transportation.

"Here is an opportunity to set a standard on the way waste is to be stored," she said.

Millard K. Ives: 343-2075
millard.ives@wilmingtonstar.com

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