

KEN OSBURN / Staff

In April, Oconee Nuclear Station will convert its control room for one reactor from analog to digital.

Oconee takes new steps to protect its reactors

Digital conversion, new safety steps planned before Japan crisis

By Anna Simon
CLEMSON BUREAU
asimon@greenvillenews.com

The Oconee Nuclear Station will shut down one of its three reactors this weekend for refueling and to convert to a new digital safety system in its control room — a long-planned conversion that comes at a time of heightened public interest in nuclear safety.

The conversion to the digital technology at Oconee's Unit 1 will be the nation's first, and it's being closely watched by the industry. And it comes at a time when Oconee is taking new steps to protect the reactors and to guard against the loss of critical cooling water.

The digital conversion and other upgrades to prepare Oconee for its next 20 years now carry new significance. The ongoing crisis in Japan is threatening to kill a resumption of nuclear reactor building in the United States.

The nuclear industry here is hard at work seeking to reassure the public that reactors are safe.

Oconee's conversion, planned long before Japan's crisis unfolded, "provides operators an even more reliable system to ensure the safety features of the plant will function should they ever be called upon," said Preston Gillespie, site vice president at Oconee.



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Other upgrades at Oconee include added protection against floods and other natural disasters at the plant on the shore of Lake Keowee, which is ringed by a growing residential community and is a source of recreation and drinking water for Upstate residents.

Seneca and Clemson

See OCONEE on page 3A

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FROM PAGE 1A

are within the plant's 10-mile emergency planning zone. Greenville is about 30 miles away.

New protection being added against natural disasters includes modifications to protect the reactor core from projectiles during tornadoes, high winds or storms, Gillespie said.

Steel structures are being built around huge water tanks in front of each reactor building to protect the tank so the required amount of water to keep the core cool is always available, Gillespie said.

The work is part of $2 billion Duke Energy is investing in the facility, which is the company's oldest and largest nuclear power plant. Five of Duke's seven nuclear reactors are in South Carolina, and the company plans two new reactors in Cherokee County.

Defending safety

South Carolina stands to gain from planned industry investments in a nuclear renaissance expected to bring jobs and increase tax revenue. In addition to Duke's two planned reactors, SCANA Corp. plans another two reactors at the V.C. Summer Nuclear Station near Jenkinsville.

Sen. Lindsey Graham recently launched a high-profile defense of nuclear power, leading the press on a tour of Oconee.

"America needs nuclear power. These reactors have served our communities well, and I want to build more of them because America has to have affordable, clean power," he said.

Graham also said the station has a $90 million payroll and pays $27 million in property taxes.

Rajendra Singh, the D. Houser Banks professor of electrical and computer engineering at Clemson University and an internationally known solar cell technologist, opposes all new nuclear reactor construction and calls for further safeguards at existing nuclear plants.

Solar cells are safer and more cost-effective than nuclear, Singh said.

"As citizens, we cannot close our eyes on future generations of human beings, thus all issues related to environment cannot be ignored," said Singh, who is concerned with issues of nuclear waste storage, decommissioning of reactors and health risks of exposure to low-level radiation.

"Solar and wind are the only sustainable energy sources for sustainable global economic growth," Singh said.

Graham, amid his support for the industry, said he worries about spent fuel storage.

Spent fuel pools are in the secondary containment part of reactors, not the more robust primary containment, so any radiation released is more likely to reach the outside environment, according to the Union of Concerned Scientists.

Three-foot concrete walls cover Oconee's two spent fuel pools, Gillespie said. Spent fuel is stored in the pools for a minimum of nine years to allow the heat and radiation levels to decrease, then moved to dry cask storage, above ground elsewhere on the plant site, Gillespie said.

No nuclear waste is stored underground at Oconee.

Possible relicensing

Now in its 38th year of operation, Oconee has been relicensed through 2033 for Unit 1 and 2034 for Units 2 and 3. The Nuclear Regulatory Commission is working on a new process that could add another 20 years, said Dhiaa Jamil, chef nuclear officer for Duke Energy.

Currently about half of South Carolina's electricity is generated by nuclear plants, Jamil said.

U.S. reactors are designed with redundant systems that prevent the cooling problems at Fukushima, Jamil said.

"We don't know all the details of what took place in Japan. The lessons from that will come," Jamil said. "There is no doubt in my mind that once the facts are known about the Japanese crisis, this industry will emerge even stronger."

The Fukushima plant lost outside power and on-site emergency power, resulting in a station blackout — a scenario that critics say could happen here if, as in Japan, backups can't operate for a sufficient amount of time until power is restored.

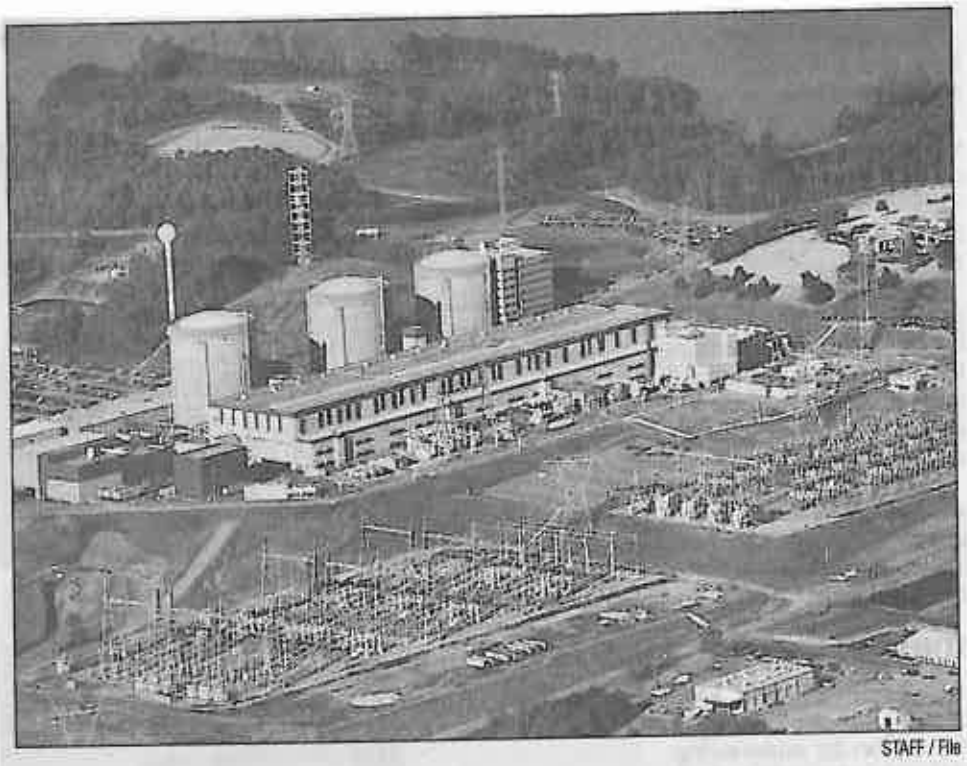
Jamil said that since the 1980s, the NRC has required all licensed reactors "to demonstrate that they can cope with that specific scenario" and that procedures, training and new equipment were added "to ensure that we can handle exactly that scenario." Jamil doesn't know whether Japan requires the same standard.

"There is an assumption that they did not," Jamil said. "That is one of the facts that will come out."

After the terrorist attacks in 2001, the NRC required U.S. plants to show they can cope with the loss of large portions of the plant due to explosions or fire, and additional remote equipment was added, Jamil said.

"We have to be able to demonstrate that the reactor can be cooled, can be safely shut down," Jamil said. "I can say with confidence that we have that scenario covered."

David Lochbaum, director of the Union of Con-



STAFF / File

The reactors at Oconee Nuclear are being refitted for another two decades of service.

cerned Scientists' Nuclear Safety Program, said that the NRC reactor oversight process offers protection against problems "caused by aging plants or a complacent owner or some other act of nature," but it's "not foolproof."