Duke: Oconee can survive dam breach

Flood threat at station remains, report says

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For decades, government regulators have been concerned that the Oconee Nuclear Station's three reactors could melt down if the Jocassee Dam were ever to fail.

But in a new report, once held from public view, the station's owner suggests the plant's safety systems wouldn't be at risk.

The potential threat of flood at the 40-year-old station remains, however.

A rainfall event of epic proportions — the potential for a dam break aside — could flood Oconee, Duke Energy said in a report it authored earlier this year that was kept from the public until its recent release under the Freedom of Information Act.

The findings of the company's flood re-evaluation — required by the U.S. Nuclear Regulatory Commission following a devastating meltdown in Japan 2½ years ago — are still subject to regulatory scrutiny and further review to determine exactly how vulnerable the plant's systems might be.

The company says it is diligently working to determine the effects of a flood on safety systems, while using temporary measures — such as sandbags to bolster flood barriers — to ensure Oconee's safe operation.

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Nuclear watchdogs say they are skeptical, that the latest flood estimations are among a host of other attempts over the past few decades by Duke to downplay the risk and avoid tough questions.

Concerns over flooding, particularly in the event of a break in the Jocassee Dam upstream, have simmered for decades among rank-and-file NRC engineers who have expressed frustration that the agency's enforcement was inconsistent, according to internal communications released earlier this year by the NRC.

In the past year, two NRC whistleblowers have claimed that their agency has used the guise of security to withhold information that they said shows just how long engineers expressed concerns over a dam break, while the agency did little to hold the company accountable.

One particular document from 2008 titled "Why did the Oconee flood issue take many years to address?" shows concern dating back to 1977, four years after the first reactor came online.

"Duke has tried its best to avoid the cost of a real fix to the flooding issue at Oconee," said Jim Riccio, nuclear policy analyst for Greenpeace. "The public that Duke has placed at risk and that NRC has failed to protect deserves better."

The report, prepared by an outside engineering firm, is among the first produced since the NRC required nuclear operators to re-evaluate flood plans after the March 2011 meltdown of the Fukumshima plant spawned by a huge offshore earthquake and tsunami.

"Although the risk of a natural event with the magnitude of the Japan earthquake and tsunami occurring at Oconee is small, Duke Energy takes this risk and our obligation to protect the public very seriously, and we are implementing additional safety measures," company spokeswoman B.J. Gatten said.

The NRC will review the report and expects to be done by April 2014, after which Duke will submit an assessment of how newly revised flooding levels could affect Oconee's systems, agency spokesman Scott Burnell said.

'Intense rainfall'

Last spring, *The Greenville News* reported on the NRC's release of internal communications dating back to 2008 depicting staffers convinced that a dam break would flood Oconee and lead to the meltdown of its three reactors.

The documents had been labeled as "security related" or "sensitive."

The NRC had ordered a review of seismic and flood scenarios before Fukushima, and Duke incorporated the mandate in what became an industrywide review following the disaster.

Duke's latest analysis was submitted to the NRC in March.

The report — labeled "security sensitive information, withhold from public disclosure" — was released in response to a Freedom of Information request by Greenpeace.

In the report, the company details how floodwaters from a failure in the 385-foot-high earthen Jocassee Dam wouldn't inundate the plant's safety systems.

The analysis shows that waters from a Jocassee break that cascade into failure of the Keowee Dam would remain 5.6 feet below the site's elevation.

Duke says a break in the Jocassee Dam would happen under three scenarios: seismic activity, overtopping from intense rainfall or flaws in dam construction.

The company has concluded that failure because of seismic activity or overtopping aren't credible threats, Gatten said, pointing out that the NRC concurs with Duke's assessment.

Duke is investigating the concept of flaws in dam construction and is reporting to the NRC, though the company has said the dam's design and required inspections make a failure extremely unlikely.

The threat of plant flooding could exist, however, as a result of direct, intensive rainfall, according to the report.

Intense precipitation would produce floodwaters nearly four feet higher than the station's elevation, particularly near the building of the station's oldest reactor, the report states.

The maximum amount of precipitation expected would be 46.6 inches of rain over a 72-hour period, according to the report.

In Duke's presentation of the study to the NRC in March, company representatives pointed to Hurricane Irene in August 2011, which was notorious for the flooding it created in North Carolina over a short period of time, but dropped only half the amount of rain.

The station will be required to perform permanent modifications to protect against the new hazards, according to the report. The final designs will be based on further review.

Duke has requested the NRC to approve its final design plans in March 2015 so that the fixes can be finished by a 2016 deadline, Burnell said.

Floodwall questions

A central concern to nuclear regulators over the years has been the floodwall that protects Oconee's "standby shutdown facility" — a backup source that provides power to cool reactor cores in the event of a loss of power.

In 1983, Duke completed a Jocassee dam failure study to determine the peak flood in case of a sunny-day failure, according to the report.

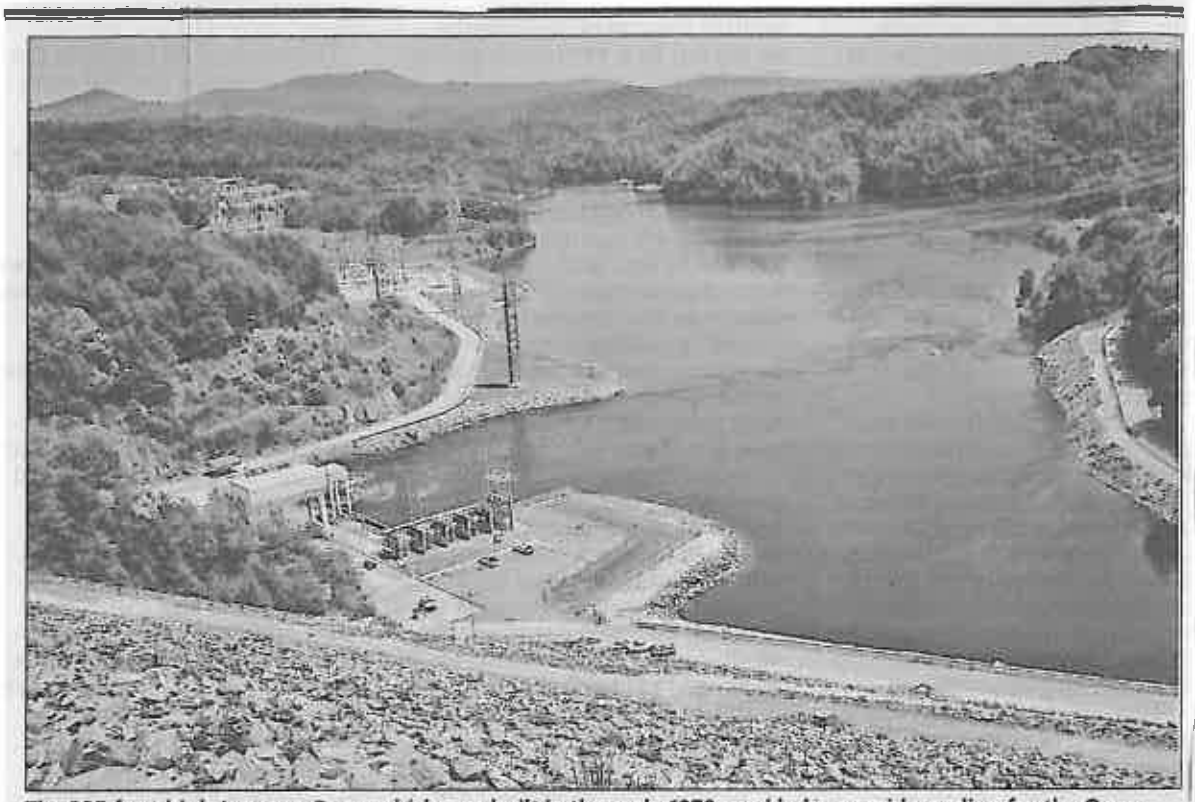
The 1983 analysis estimated that the shutdown facility would be flooded under 4.71 feet of water.

The determination prompted Oconee to erect several walls about five feet high around the entrances to the system, according to the report.

Concern among NRC engineers lingered. After the agency requested more information in 2008, Duke increased the height of the floodwall by 2½ feet, the report states.

However, after the modification, NRC engineers still worried that water levels between nine to 16 feet could overwhelm the 7½-foot floodwall that is in place now.

Last fall, two NRC risk analysis engineers spoke out publicly on their concerns that the NRC had improperly withheld information from the public to avoid embarrassment over how long the agency knew about concerns.



The 385-foot-high Jocassee Dam, which was built in the early 1970s and helps provide cooling for the Oconee reactors, looks down on Lake Keowee. FILE/STAFF

One of the two, Larry Criscione, has said he fears reprisal and, with the help of an advocacy group, sued the agency over documents requested under FOI.

Today, said Riccio of Greenpeace, neither Duke Energy nor the NRC will give a clear answer on how high the floodwall will be once modifications are complete.

"It's been a year since this story broke revealing that Duke and the NRC had ignored a clear and present danger at Oconee that could result in a triple meltdown," Riccio said.

"A year later and more than a decade after the threat was first identified, the public still cannot get a clear answer from either Duke or the government. 'Will the flood wall be higher than the potential flood?' That shouldn't be a difficult question to answer."

In a recent meeting between Duke and the NRC in Atlanta to discuss flood plans across the company's fleet, NRC region administrator Victor McCree said that "there's a lot of detailed analysis, inundation studies that have to be completed."

"Oconee is still required to submit its flood evaluation and to install diversion structures, walls and so forth," McCree said, "to ensure that they can protect the plant, and that will be part of what they submit and part of what we will be using."

Once modifications are complete, "The new flood diversion wall will be higher than the floodwaters," Duke's Gatten said.

"For a rain event," she said, "the existing standby shutdown facility wall has sufficient margin to protect from the new severe rain event. The 7½ (foot) floodwall around the standby shutdown facility is more than sufficient."

Duke's flood analysis estimates that while Oconee wouldn't be inundated, the Keowee hydroelectric station between Oconee and Jocassee would be flooded.

The Keowee station provides emergency power to Oconee, Gatten said, but "we have other backup emergency power that is above the floodplain."

In the meantime, Duke employs "compensatory measures" approved by the NRC to protect against flood, such as increased inspections of the Jocassee Dam and sandbags at various points to protect the reactors.

In early 2012, sandbags were used after NRC inspectors determined that some structures needed further protection.

In the recent flood report, Duke said that "sandbag flood barriers continue to serve as an effective measure" against intense rainfall events.