

December 5, 2012

HUFF
POST GREEN

Nuclear Power Whistleblowers Charge Federal Regulators With Favoring Secrecy Over Safety

Posted: 12/04/2012 1:05 am EST Updated: 12/05/2012 8:57 am EST



Union of Concerned Scientists
The Oconee Nuclear Station in South Carolina. (Union of Concerned Scientists)

Richard H. Perkins and Larry Criscione are precise and formal men with more than 20 years of combined government and military service. Perkins held posts at the Department of Energy and the National Nuclear Security Administration before joining the Nuclear Regulatory Commission's Division of Risk Analysis in 2008. Criscione landed at the agency a year later, after five years aboard the USS Georgia as a submarine warfare officer.

Now both men are also reluctant whistleblowers, stepping out publicly to accuse the NRC of being both disconcertingly sluggish and inappropriately secretive about severe – and in one case, potentially catastrophic – flood risks at nuclear plants that sit downstream from large dams.

A number of nuclear safety advocates who have looked into the matter in recent weeks have echoed their complaints, and a collection of documents obtained by The Huffington Post – including a 4-year old internal communication plan for NRC officials seeking to head-off criticism

of its handling of the dam threat, as well as detailed correspondence between Criscione and NRC leadership on the issue – appears to lend credence to the engineers' concerns.

Taken together, the documents and charges shed new light on an agency that has been [repeatedly criticized](#) for allowing plant owners to delay crucial safety improvements for years, and for diligently withholding information not as a way of protecting the public interest, but as a way of protecting itself.

"When you're working with sensitive information, you just don't talk about it, so what I'm doing I find to be both perverse and uncomfortable," Perkins said. "But I had to do it."

The NRC argues that it has worked swiftly and diligently to address the safety issue that prompted the engineers to speak out, which concerns the risk that certain nuclear power plants would experience severe and potentially catastrophic flooding should nearby dams succumb to mechanical or engineering failures – or even to the increasingly unpredictable whims of Mother Nature.

Further investigation of the issue is underway, the NRC says, as part of an industry-wide review of U.S. plants sparked by the earthquake and tsunami that caused multiple nuclear reactor meltdowns at a facility in Fukushima, Japan last year. Details relating to the flood threat have been appropriately withheld, sometimes over many years, the agency says, in order to prevent terrorists or other nefarious actors from somehow exploiting it.

Scott Burnell, a spokesman for the NRC, calls the matter one of incomplete context.

"It's fair to say that when you draw a Venn diagram of safety issues and security issues, you will find areas of overlap where the line might not be as bright as one might think when looking at the situation from the outside," Burnell said. "If you don't have the full context it can be very difficult to draw that bright line."

But Perkins and Criscione, who raised alarms on the issue independently of one another, say they believe that defense is bogus, and that the agency is invoking security concerns in order to hide its failure to address a persistent and well-understood safety threat.

"It is hypocritical for the NRC – or any government agency – under the guise of security, to withhold information from the American public concerning a potentially significant public safety vulnerability, yet take no real action to study and correct the supposed security vulnerability," Criscione said. "If we believe there is a security vulnerability, we need to take measures to address it and not merely withhold it from public discussion."

Richard H. Perkins, top, and Lawrence Criscione, are risk analysts within the Nuclear Regulatory Commission. They are also whistleblowers who say the agency is not leveling with the public.

REDACTIONS AND INACTION

Perkins was tasked in 2010 with spearheading what he says was always supposed to become a publicly available review of the dam-flood threat at U.S. nuclear power plants. Instead, he says, NRC management pushed back almost immediately to exclude certain information from the analysis.

As a career government employee accustomed to the careful handling of nuclear-related information, Perkins says the static came as a surprise. In his estimation, none of the information he and his team had compiled would normally be withheld from the public, though he added that he could not discuss specifics without jeopardizing his job.

When the report was completed and shared internally at the NRC in July 2011, Perkins said he felt he had ultimately prevailed in keeping most of the information he considered pertinent in the report. But he was chagrined when a public version was [released last March](#) with substantial portions of the document blacked out.

The NRC has argued that the redactions were appropriate, and made in consultation with other government agencies, but Perkins is skeptical.

"Our mandate is to promote safety, and sometimes that involves withholding information for security's sake," Perkins said. "To keep bad people from knowing how best to attack us, say, or to prevent our adversaries from knowing how we might come after them, or to buy time while a serious vulnerability is corrected. These are all reasons that you might redact information," he continued. "But the redactions by the NRC did not promote safety in any of these ways. The actions have, in fact, allowed a very dangerous scenario to continue unaddressed for years."

An [unredacted version](#) of Perkins's report, obtained by The Huffington Post in October, revealed that much of the blacked-out information was publicly available in other documents and websites already published online, including simple maps of where nuclear plants stood in relation to upstream dams or the height of flood walls designed to protect safety equipment. Threats of varying significance were identified in Perkins's analysis at the Ft. Calhoun station in Nebraska, the Prairie Island facility in Minnesota and the Watts Bar plant in Tennessee, among more than two-dozen others.

The document also cited analyses by Duke Energy, owner of the Oconee Nuclear Station in South Carolina, that were performed as far back as the early 1990s, suggesting that the NRC had known for some time about the flood threats. Those analyses showed that the 5-foot flood wall protecting crucial safety equipment at Oconee would prove inadequate in the event of a catastrophic failure of the Jocassee Dam, located 11 miles upstream on Lake Keowee. If that dam failed completely, the report suggested, floodwaters as high as 16.8 feet would inundate the Oconee facility, and a meltdown would be a virtual certainty.

A timeline released by the NRC on Thursday in response to a Freedom of Information Act request suggests that the agency was aware of the dam flood threat at Oconee as far back as 1994, but over the following two decades, Duke repeatedly said it regarded the odds of the Jocassee Dam failing as exceedingly slim.

NRC staff continued to raise concerns with Duke over that long time period, but at no time did the agency threaten to shut the facility down, or otherwise force the company to fully assess and correct what appeared to be a risk of unusually high magnitude. By 2008, NRC had even prepared an [internal communications plan](#) to deal with potential questions relating to the vulnerability, which was still unaddressed.

The plan, a heavily redacted version of which was released this week by the NRC in response to a Freedom of Information Act request, suggests that by at least 2005, NRC staff had "discovered that the licensee had erroneously computed a random rupture frequency for the Jocassee Dam, a frequency significantly lower than what could be justified based on actual data." The communications plan also revealed that virtually all plants facing similar threats from upstream dams -- nearly three dozen -- had used Duke's faulty arithmetic as a guide in predicting their own vulnerabilities.

By NRC's own calculus -- which was blacked out in the public release of Perkins's report -- the odds of failure in any given year of a large rock-fill dam like the one at Jocassee were about 1 in 3,600. For the Oconee plant, that amounted to a 1 in 163 chance of a catastrophic flood in any one of the 22 years remaining on its operating license -- a risk the agency itself described as being "an order of magnitude larger" than Duke's estimate.

David Lochbaum, a nuclear engineer and safety advocate with the Union of Concerned Scientists, a Cambridge, Mass.-based advocacy group, calculated that the 34 reactors highlighted in Perkins's analysis are downstream from a total of more than 50 dams -- half of them roughly the size of the Jocassee Dam. "Assuming the NRC's failure rate applies to all of those dams," Lochbaum noted in an [analysis](#) posted to the group's web site, "the probability that one will fail in the next 40 years is roughly 25 percent -- a 1 in 4 chance."

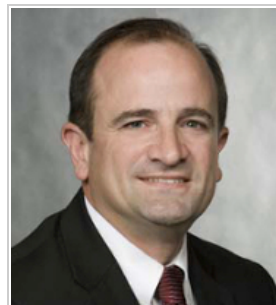
The NRC told The Huffington Post that ongoing re-analysis of flooding hazards from all sources -- required by the NRC as part of its post-Fukushima safety analysis -- "will determine whether any additional mitigation measures or plant modifications are required for every U.S. nuclear power plant." And both Duke Energy and the NRC have repeatedly insisted in interviews that steps have been taken to ensure the safety of the Oconee facility. "Not every solution to an issue is visible to the general public," said Burnell, the NRC spokesman, who added that the agency cannot discuss information that was officially redacted from Perkins's report.

"Duke's actions to date, both at Oconee and Jocassee," Burnell said, "continue to show the plant can keep the public safe if something occurs at Jocassee."

Sandra J. Magee, a spokeswoman for Duke Energy, said the company is continuing to look at flood protection enhancements with the NRC through the industry-wide response to recommendations made by the NRC's post-Fukushima [Near-Term Task Force](#). "Oconee is in compliance with the station's licensing basis for external flood events," Magee said. "We have anticipated the maximum flooding scenario and the plant has the means to safely shutdown and cool the reactor units."

But nuclear safety advocates have questioned these assertions -- particularly given that the NRC continues to redact and withhold key information related to the threat. "You can't have it both ways," said Lochbaum, who reviewed the un-censored version of Perkins report and concluded that the redactions were spurious. "If it was a true security threat, the NRC and the operator would be obliged to quickly remove the threat. If they had done that at any point over the last 15 years, there would be no need for redactions."

"Google searches will turn up plenty of pictures of Jocassee from the air and ground," Lochbaum added. "I did a YouTube search and even came across a [10-minute documentary](#) about building the dam."



Jim Riccio, a nuclear analyst with the environmental group Greenpeace, which first obtained the unredacted version of Perkins' report, said the emerging paper trail has eroded the NRC's credibility on the issue. "The Commission has failed its most basic mission to adequately protect public health and safety," Riccio said, "and it cannot be trusted to speak honestly about the risks that nuclear power poses."

The internal dissonance was not lost on Perkins, and he says he began to suspect that his agency's circumspection on the dam risk issue had more to do with protecting the commercial operators it oversees -- and perhaps its own regulatory reputation, given the many years the threat has existed.

By September, Perkins says he felt it was his duty to speak out. He submitted [a letter](#) to the NRC's Office of the Inspector General, the agency's internal watchdog, charging that the NRC was essentially involved in a cover-up.

"The Nuclear Regulatory Commission staff may be motivated to prevent the disclosure of this safety information to the public because it will embarrass the agency," Perkins wrote. "The redacted information includes discussion of, and excerpts from, NRC official agency records that show the NRC has been in possession of relevant, notable, and derogatory safety information for an extended period but failed to properly act on it. Concurrently, the NRC concealed the information from the public."

"Google searches will turn up plenty of pictures of Jocassee from the air and ground," said nuclear safety advocate David Lochbaum.

In an interview last week, Perkins said he has no knowledge of the status of any probe that might have been launched by the IG. Officials at the IG's office say they cannot discuss ongoing investigations.

Perkins did share a copy of his letter with his congresswoman, Rep. Donna Edwards (D-Md.), whose spokesman, Dan Weber, said it was forwarded by Edwards's office to the NRC's chairwoman. "Rep. Edwards requested responses to the concerns raised in the letter and to be kept informed regarding any action taken," Weber said. "The NRC confirmed receipt of Rep. Edwards' request and we're awaiting their response."

When asked whether any part of him believes there could be a legitimate reason for NRC to keep parts of his report from the public, Perkins became animated. "I could so easily answer this question -- I'm dying to answer that question," he said. "But I cannot answer that question without going into the area that I am not allowed to talk about."

"I will say that, when you're a regulator, and you're dealing with these safety issues, the public not only should be able to watch what you're doing, they actually must, in accordance with the law, be able to see what you're doing," Perkins added. "We don't work for nuclear operators, after all. We work for the American people."

BUREAUCRATIC WHEELS TURN SLOWLY

Criscione was not directly involved in Perkins's review of the dam risk issue, but when that review was first floated in early 2010 within NRC's risk analysis division, where Criscione works, he began following its progress keenly. In explaining his interest in the topic, he points to decades spent working and camping at -- and later taking his family to -- the Johnson's Shut-Ins State Park in the Missouri Ozarks, one of the most popular outdoor recreation areas in the Midwest.

In December 2005, the Taum Sauk hydroelectric reservoir above that campsite broke through its impoundment and sent roughly 1 billion gallons of water and a 20-foot tidal wave roaring down from Proffit Mountain. The 12-minute deluge completely destroyed the camping area, shaved a gargantuan swath of thick forest to bare rock and dirt, destroyed the home of the park superintendent and dragged him and his family for a quarter mile.

"The destruction at the site was incredible," [federal investigators noted](#) at the time. "All of the trees in the path of the flowing water were stripped off the earth's surface. What remained were large rocks and exposed bedrock surfaces. The flowing water removed soil from the valley floor, and created large scour holes."

While sustaining numerous injuries, the superintendent and his family survived, and the campsite, given the chilly time of year, was otherwise deserted. But the incident stuck with Criscione, a mathematical man who says he recognized a could-have-been-me moment in the disaster. It was eventually attributed to improperly placed and malfunctioning sensors that allowed the reservoir to fill beyond safe levels. When he learned of the dam issue facing the nation's nuclear power plants, Criscione says he felt compelled to make certain the threat was clearly understood by the American people, even if it meant risking his job.

"One of the most unfortunate aspects about safety is that when an engineer does stand his ground and sacrifices his career over a safety concern -- and by doing so, prevents a disaster -- no one ever knows," Criscione said. "We cannot know of something that did not occur. We cannot know of something that was prevented. Had a technician or engineer gone to the press in November 2005 and got the sensors at Taum Sauk fixed, he would have never known the ordeal from which he spared the superintendent and his family. All he would know is that he pointlessly sabotaged his career due to a tinge of conscience."

After learning of the heavy redactions in Perkins' report, Criscione's own twinge of conscience, he says, prompted him to independently investigate the dam flood risk issue. Four days Perkins after filed his complaint with the Inspector General's office, Criscione dispatched a lengthy letter to the NRC's chairwoman, Allison MacFarlane. The letter included dozens of attachments of unearthed internal correspondence between the Nuclear Regulatory Commission and Duke Energy regarding the flood threat at Oconee.

Both the letter and the documents were obtained independently by The Huffington Post, and while Criscione and NRC officials said they could not comment on their contents, they independently confirmed that the materials were genuine and were being addressed internally. The Huffington Post has made Criscione's letter and the attached documents available [here](#).

By itself, Criscione's 19-page letter to NRC leadership provides an exceptionally detailed summary of the flood issue facing Oconee -- and

what amounts to more than two decades of dithering by both the licensee and federal regulators. Criscione prefaced his letter by quoting a former Navy admiral, who shepherded the development of the nation's nuclear submarine force:

A major flaw in our system of government, and even in industry, is the latitude to do less than is necessary. Too often officials are willing to accept and adapt to situations they know to be wrong. The tendency is to downplay problems instead of actively trying to correct them.

The archive of attached letters suggests that NRC began nudging the Oconee operators to clarify and address the issue with increasing urgency at least 6 years ago, but that Duke Energy repeatedly pushed back. In a letter sent in September 2008, the company insisted that "there is no evidence to suggest that a Jocassee Dam failure is credible." NRC officials made clear that they did not agree with that assessment, and in a 2009 response to Duke's letter, the agency again laid out its concerns. Among them:

- That the plant's critical safety equipment is protected from floods only to a height of 5 feet.
- That Duke's own analysis from 1992 showed flood heights from a failure of the Jocassee Dam ranging between 12 and 17 feet.
- That Duke's calculations of the odds of a Jocassee Dam failure were low "by an order of magnitude."

But the agency did not take a hard stance and force Duke to rectify the situation immediately – a timidity that, according to Criscione's letter, sparked internal objections beyond his own and those of Perkins. In one instance in 2009, a protestation was filed by a deputy director within the Division of Risk Assessment, who was quoted as saying, "I remain concerned that this approach is not in the best interest of public health and safety and security, regulatory stability, and our role as a strong regulator."

The deputy director's official objection, called a "non-concurrence" in NRC parlance, further argues:

No other potential initiating event at Oconee is as risk significant. The probability of core damage from a Jocassee Dam failure is three times higher than the sum total probability of core damage from all initiating events. Duke has acknowledged that, given a Jocassee Dam failure with subsequent site inundation, all three Oconee units will go to core damage; that is given a dam failure, the conditional core damage probability is 1.0. ... For a Jocassee Dam failure, using potentially optimistic assumptions, Duke estimates that containment will fail approximately 59 to 68 hours after dam failure without mitigating actions. Under the dam break conditions, resultant flood waters and infrastructure damage would affect public evacuation and potentially affect emergency operations facility response capability. Duke has not demonstrated that its radiological emergency plan actions can be adequately implemented under these conditions.

In his letter to NRC leadership, Criscione underscored the deputy's assertion that "conditional core damage probability," or CCDP, is 1.0.

"Like all probabilities, CCDP must be a number between 0 and 1," Criscione wrote. "A value of 0 means that given only that specific event, there is no chance that core damage will occur. A value of 1 means that given that specific event (e.g. a failure of the Jocassee Dam) then core damage will certainly occur. For most initiating events (e.g. tornadoes, loss of offsite power, fires) the CCDP is typically a very small fraction on the order of one ten-thousandth to one-tenth.

"1.0 might not sound big," he wrote. "But it's enormous."

Asked directly whether, as of today, the Oconee plant could withstand flooding that arises specifically from the wholesale failure of the Jocassee Dam, Scott Burnell, the NRC spokesman, was equivocal. "NRC continues to conclude appropriate actions have been taken at Oconee to address potential flooding issues and that the plant is currently able to safely mitigate flooding events," he said. "Ongoing re-analysis of flooding hazards from all sources, required by the NRC as part of the post-Fukushima lessons learned effort, will determine whether any additional mitigation measures or plant modifications are required for every U.S. nuclear power plant."

Asked in a follow-up whether the "flooding events" the Oconee plant was able to mitigate included the failure of the Jocassee Dam, Burnell would only invoke the same language: "The NRC, with all the information available today, continues to conclude Duke has taken appropriate actions to ensure Oconee can safely mitigate flooding events," Burnell said – though he added: "That statement in no way precludes additional flood mitigation actions on Duke's part, and the NRC will ensure any further work, whether based on existing information or the upcoming flooding re-analysis, meets applicable standards to further enhance Oconee's ability to operate safely."

Both Perkins and Criscione remain unconvinced of that – and both continue to take issue with the NRC's longstanding policy of keeping information relating to the dam threat from the public.

Criscione says he received a minor reprimand from his superiors for releasing his letter to NRC leadership to members of Congress without properly stamping it, as nearly all documentation relating to the dam threat has been, as "Official Use Only." Beyond that, however, he says he has no idea whether his complaints will result in any swifter action.

"If the safety vulnerabilities which the Jocassee Dam poses to the Oconee reactors were being swiftly and adequately addressed, then I would accept the argument that there is no need to publicly broadcast a potential security vulnerability," Criscione said in an interview last week. "But no action, to my knowledge, has been done to address the supposed security vulnerability and the actions taken to address the safety vulnerability have thus far been disjointed and inadequate.

"I believe the reason for this disjointed approach," he added, "is because the withholding of all this information from the public has resulted in there being no public pressure to countermand the pressure exerted on the NRC by Duke Energy."

In his letter to NRC leadership, Criscione notes that the odds of a Jocassee Dam failure, based on NRC calculations, appear to be similar to those of being dealt a straight in a hand of poker – somewhat rare, but not unthinkable. And Criscione adds that, as a young teenager attending summer camp at that ill-fated campground in Missouri, he drew an even less likely hand – a flush – in the first poker hand he was ever dealt.

"My poker career has gone downhill ever since," he wrote, "but I know from personal experience that being dealt a hand that beats a straight is credible."

If that's the case, he reasons, then the potential failure of the Jocassee Dam must be a credible threat as well.

HARD LESSONS

Among the myriad lawmakers to whom Criscione copied his letter to NRC management and its various attachments was Rep. Ed Markey (D-Mass.), a long-time crusader for nuclear safety. A Markey spokeswoman confirmed that the congressman's staff has requested and received multiple briefings and background materials from the NRC on the topic in response to Criscione's questions and the documents Markey's office has received over the past several months. Markey also has a long-standing and pending request with Congress's investigative arm, the Government Accountability Office, related to the resilience of the nation's nuclear reactors to extreme weather events such as large floods.

"The key question for all five NRC commissioners is whether they will support making all the safety recommendations of the Near-Term Fukushima Task Force," Markey said in an emailed statement, "including those that will address nuclear reactor resiliency to severe earthquakes, floods and other extreme weather, mandatory."

In a wide-ranging hearing on post-Fukushima lessons held this past March before the Senate Environment and Public Works Committee, lawmakers asked NRC commissioners about a report prepared by David Lochbaum of the Union of Concerned Scientists, which said in part that unless the NRC strengthens measures to prevent and mitigate threats that the nation's plants were not designed to withstand, "it may be only a matter of time before a similar disaster happens here."

Several of the commissioners insisted that the UCS was wrong. "I think that our infrastructure, our regulatory approach, our practices at plants, our equipment, our configuration, our design bases would prevent Fukushima from occurring under similar circumstances at a U.S. plant," said commissioner William D. Magwood. "I just don't think it would happen."

Another commissioner, George Apostolakis, concurred. "I disagree with the statements from UCS," he said. "I don't think that what happened in Fukushima can happen here."

Given that the agency has known for years that a tidal wave could be conceivably unleashed from Lake Jocassee should the dam holding it back fail, causing a meltdown nearly identical to what happened in Fukushima, Greenpeace's Jim Riccio suggests that the NRC has essentially been lying to Congress.

"Rather than address the threat, NRC commissioners have misled Congress and delayed action to reduce these risks," Riccio said. "The American people deserve better from the Obama administration's nuclear regulators."

For his part, Criscione says that, while he can't be sure, he suspects that there are engineers not unlike him inside Duke Energy, who may sense a duty to speak out, but are restrained by fear of reprisal.

"They are pushing to get Duke Energy to do the right thing -- but for the sake of their careers, they need to be careful on how hard they push," he said. "I, however, have the luxury of being a union-represented federal employee. Although I, too, need to be careful and diplomatic in my actions, I am in a much better-protected situation than them. It takes a lot of courage for them to come forward, whereas for me it merely requires a little bit of disgust."

Perkins, meanwhile, remains similarly resolute in his convictions that speaking out was the right thing to do, though he's uncertain about whether it will really make a difference.

"It's the two of us against the entire federal government. We're going to try our best -- it's almost an even fight," he joked. "We realize what an incredibly uphill battle we have in front of us. These things never really work out for the whistleblower."

CORRECTION: A previous version of this article misspelled the name of the hydroelectric reservoir that failed in Missouri. It is the Taum Sauk.



A cross-section of Jocassee Dam on display at Oconee's "World of Energy" exhibit.

HUFF POST HIGHLIGHTS x

people have highlighted this!
Huzzah! This text has been highlighted.

Highlights is a new way to discover the most interesting text on Huffington Post!

[See All Highlights](#)

[+Highlight this!](#)