

Nuke Plant Inspections Find Flaws in Disaster Readiness

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The Fort Calhoun nuclear power station, in Fort Calhoun, Neb., is surrounded by flood waters from the Missouri River on June 14, 2011. (Nati Hamik/AP Photo)

A special inspection of U.S. nuclear plants after the Fukushima disaster in Japan revealed problems with emergency equipment and disaster procedures that are far more pervasive than publicly described by the Nuclear Regulatory Commission, a review of inspection reports by ProPublica shows.

While the deficiencies don't pose an immediate risk and are relatively easy to fix, critics say they could complicate the response to a major disaster and point to a weakness in NRC oversight.

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[Nuclear Plants and Disasters: NRC Inspection Results](#)

by John Sullivan and Ariel Wittenberg, Special to ProPublica, June 29

The NRC ordered the inspection in response to the March earthquake and tsunami that crippled Fukushima's reactors. The purpose was to conduct a fast check on the equipment and procedures that U.S. plants are required to have in place in the event of a catastrophic natural disaster or a terrorist attack.

Agency officials unveiled the [results](#) [1] in May, stating in [a news release](#) [2] that "out of 65 operating reactor sites, 12 had issues with one or more of the requirements during the inspections."

But ProPublica's examination of the reports found that [60 plant sites had deficiencies](#) [3] that ranged from broken machinery, missing equipment and poor training to things like blocked drains or a lack of preventive maintenance. Some of the more serious findings include:

- At the [Arkansas Nuclear One](#) [4] plant outside Russellville, several portable pumps dedicated to flood control [didn't work](#) [5].
- At the [Clinton](#) [6] plant outside Bloomington, Ill., a fire pump [broke down](#) [7] during a test.
- At the [Sequoyah](#) [8] plant outside Chattanooga, Tenn., inspectors [couldn't find drain valves](#) [9] needed for flood control.
- At the [Diablo Canyon](#) [10] plant in California, a fence [blocked the path](#) [11] for a hose to pump emergency water.

Plant officials said they have moved to fix those problems and that none would have prevented them from responding in an emergency. The NRC told ProPublica that all the issues raised by inspectors "fell well short of being imminent safety concerns" and were being addressed.

In a summary attached to the inspection findings, however, the NRC expressed some concern.

"While individually, none of these observations posed a significant safety issue, they indicate a potential industry trend of failure to maintain equipment and strategies required to mitigate some design and beyond design-basis events," the [summary](#) [12] says.

The NRC [reported fewer problems at the plants](#) [13] than ProPublica because it only counted those in which a plant had a problem demonstrating how its emergency preparedness plan would work. The agency said that, despite these questions, all the plants could protect their reactors.

The special inspection covered equipment and procedures for use in disasters that are beyond the scope of the plant's design -- major earthquakes, tornadoes, floods, hurricanes and terrorist attacks.

Many of the items covered in the special inspection are supposed to be checked by NRC inspectors on a regular basis. Items that were required after the 9/11 attacks to respond to large explosions and fires -- like extra pumps, hoses and generators -- are supposed to be reviewed as part of regular triennial fire protection inspections.

David Lochbaum, a nuclear engineer with the [Union of Concerned Scientists](#) [14], says the large number of problems uncovered in the special inspection shows that NRC must strengthen oversight.

"I think they need to look at the inspections," said Lochbaum, whose group monitors safety matters. "Why did they find so much in these inspections? Shouldn't these have been found sooner?"

Nuclear plants conduct emergency drills every two years, and Lochbaum said that one possible improvement would be for inspectors to check the condition of the emergency response equipment then.

Mary Lampert, executive director of the advocacy group [Pilgrim Watch](#) [15] in Massachusetts, said many of the deficiencies uncovered by the NRC may seem minor but could quickly turn into bigger problems in an emergency situation.

"They all add up. They cannot wait for a disaster to start looking around for a screwdriver that is required to open a valve because time is typically of the essence," she said.

Lampert said it is important for the NRC to keep an eye on the problems they found and not simply assume the nuclear companies will fix everything.

The Fukushima accident has focused the NRC's attention on the risk that a natural disaster or attack could knock out a plant's safety systems for an extended period and lead to a radiation release.

Although all plants are designed to withstand natural disasters, U.S. nuclear facilities are aging. Recent studies have shown that earthquake risks are now higher than they were predicted when some plants were built, although the NRC says reactors can still withstand the highest expected quake. Now historic flooding on the Missouri River is testing design limits at two Nebraska plants.

Flood waters are expected to come within a few feet of levels the [Fort Calhoun](#) [16] and [Cooper](#) [17] nuclear plants were built to withstand. At Fort Calhoun, a [special berm providing backup protection collapsed](#) [18] Sunday after being damaged. Operators briefly turned on emergency diesel power but said there was no risk to reactor cooling systems. The plant has been shut down for refueling since early April.

On April 1, the NRC launched a task force of senior agency managers to examine the ability of plants to respond to events that might overwhelm existing safety systems and procedures. The panel is concentrating on disaster preparedness and the ability to survive a lengthy blackout, as at Fukushima.

The six-member group is scheduled to report its findings to the commission on July 19, and the NRC has held two [briefings](#) [19] on the subject so far. Until the task force reports back, the NRC said it would not comment on what, if any, changes the agency might propose.

The Union of Concerned Scientists and other watchdog groups have said that Fukushima points to the need for some obvious improvements, such as adding backup generators and moving used nuclear fuel [out of cooling pools](#) [20] and into safer storage locations.

The nuclear industry's main trade group, the Nuclear Energy Institute, is teaming up with the [Institute for Nuclear Power Operations](#) [21] and the research organization the [Electric Power Research Institute](#) [22] to develop disaster preparedness [guidelines](#) [23] for nuclear companies, said Thomas Kauffman, a spokesman for NEI.

Kauffman said U.S. nuclear plants have survived hurricanes, tornadoes and extended power outages without damage to their reactors, but the industry is looking hard at Fukushima nevertheless. "We want to take the lessons learned and make sure they are applied across the industry," he said.

[Chairman Gregory Jaczko](#) [24] raised the issue of emergency preparedness this month at an International Atomic Energy Agency conference in Vienna. According to a copy of his [speech](#) [25], he brought up the post-Fukushima inspection results.

"While I see nothing that calls into question the safety of our plants, I see areas where performance was not as good as would be preferred," Jaczko said. Changes are likely, he added, "although it is too early to say right now precisely what those changes might be."

Jaczko visited the Nebraska plants this week and declared that, while flood conditions were likely to continue for some time, the plants are safe.

"Water levels are at a place where the plant [workers] can deal with them," Jaczko said at Fort Calhoun on Monday, [according to the Iowa Independent](#) [26]. "The risk is really very low that something could go wrong."