NRC Probes Oyster Creek's Hurricane Sandy Response

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By Roger Witherspoon

Federal regulators have launched a special probe to determine if officials at the Oyster Creek nuclear power violated rules and waited too long to declare an emergency alert as rising waters threatened critical reactors systems.

Three inspectors from the Nuclear Regulatory Commission began a "special inspection" Tuesday into the alert called by plant officials as waters driven by the storm rose to 7.4 feet in the plant's intake structure. The alert, the second level in the NRC's four-part emergency notification system, was called shortly after the water rose past six feet above sea level at the plant site on Barnegat Bay.

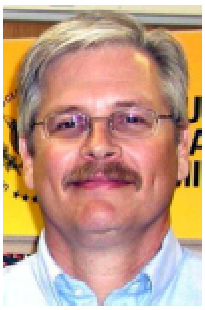
The water, driven by winds from Superstorm Sandy which, at times, approached 100 miles per hour, first knocked out 36 of the plant's 43 emergency Planning Zone sirens needed to warn the more than 100,000 residents within 10 miles of the site of any major emergency. Then just before 7 PM Monday, officials at Exelon, which owns the plant, declared an "Unusual Event," the lowest of four levels of nuclear alert, due to high water in the intake building controlling the plant's cooling system. At the same time, the regional grid shut down and the plant had to rely on its diesel generators to keep its safety systems operating.

Oyster Creek is a boiling water reactor, the same type as those at the ill-fated Fukushima Daiichi in Japan. Its spent fuel pool is on top of the reactor and both are in the same containment building. Exelon elevated the plant's status to the second level "Alert" status as its generators took over efforts to keep the spent fuel pool cooled.

The rising water levels were of particular concern at Oyster Creek, explained NRC spokeswoman Diane Screnci, because if it rose too far it could impact the plant's service water pumps, which are used to shut down the reactor itself.

The three member team, said Screnci, "are looking at the response of the emergency preparedness at the site, and the circumstances surrounding the rising levels in the intake structure. They are looking specifically at the timing of the alert declaration, and the company's preparedness prior to the storm, the performance of its equipment, and their command and control during the storm.

The onsite inspection should be concluded by the middle of next week, Screnci said.



"We sent a special team because we want a better understanding of what happened and why it happened."

The team is led by Jack Bower, the senior resident NRC inspector at the Hope Creek nuclear power plant. Working with him is an operations engineer who will examine management's actions before and during the storm, and an emergency preparedness specialist. The inspection was triggered by observations of the two resident inspectors at the plant, who raised questions about the handling of the emergency alerts. "The resident inspectors have been doing some follow up since the hurricane," Screnci said, "and we decided we needed to send the inspectors there to take a closer look."

There are specific regulations governing the declaration of emergency declarations at nuclear power plants. The lowest level, called "unusual events", requires notification of the NRC as well as state emergency officials. Elevating the alarm to the second level, an actual "alert," requires additional notifications and staffing of an emergency operations center. Ultimately, the plant operator and the NRC are responsible for conduct at the plant site and coordination with outside agencies. The state is responsible for all emergency actions outside the plant property. In New Jersey, Gov. Chris Christie's office would be responsible for making the call for any evacuations, while in New York, a home rule state, any evacuation orders would be up to the local county executives. The information flow to the NRC headquarters and state emergency officials, therefor, is critical.

In this case, Oyster Creek and 10 other nuclear power plants considered in the direct path of Sandy were already being monitored by special teams sent by the NRC the weekend before the Superstorm struck the New Jersey coast.

Salem 1 faced the most critical situation, but handled it by the book and do not need a special examination. Under NRC guidelines, Salem and Hope Creek, both on Artificial Island on the Delaware River, had to shut down if there were sustained winds of 74 miles per hour or the river reached 99 feet in depth. The plants' "design basis" states the sea wall would repel water up to 120 feet, a level only anticipated with a Category 4 hurricane.

Sandy pushed water levels in the Delaware River to 98 feet, and the winds created additional waves approximately 12 feet high. The high waves in the river swamped four of Salem's six massive pumps in a building along the river's edge which pull in the water through a 40-foot wide conduit. The loss of these pumps caused a chain reaction of events leading to a shutdown of Salem 1and a massive steam dump into the atmosphere. Officials later said the steam had little or no detectable radiation.

Screnci said that if the inspectors find that Exelon, the managers of Oyster Creek, did not respond to the situation properly, it is likely to trigger increased inspections and oversight of the plant. While the NRC can fine plant operators for violations, that is a remedy usually reserved for cases of willful disregard of safety rules, not for errors of judgment particularly if, in the end, there were adverse impacts on the public. In this case, Screnci emphasized, the public was never in danger.

"Typically, after an event like this, we do look at whether there are things we can improve," she explained. "It's not so much a formal lessons learned exercise. But we will look at what we did and how it worked. Do we need to have more people monitoring events in place earlier in the development of a situation like this, for example?

"We continually take a look at requirements to see if there is need for improvement."