

Energy Matters

[Unexplained Mishaps Shut Indian Point 3](#)

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By Roger Witherspoon

A series of unexplained mechanical failures – including a large hot water leak and the activation of a fire suppression system – triggered an emergency shut down of Indian Point 3 late Thursday night. It is the seventh unplanned shut down between the twin Indian Point reactors in the past two years.

The latest mishap comes just one week after failures in the steam generation system forced the shut down of the companion nuclear reactor at Indian Point 2. That reactor is still off line while engineers at Entergy Nuclear Northeast, owners of the Indian Point site, try to find what caused rising water levels in its massive steam generators, and triggered an automatic shut down.

Last week's event prompted inspectors for the Nuclear Regulatory Commission to begin an investigation in the management of the nuclear site's major equipment, since it was the sixth unplanned scram. While the NRC has treated the shut downs, or "reactor trips," as separate incidents, officials now are looking to see if there are common elements in overall management and training leading to the disruptions at the site.

NRC spokesman Neil Sheehan said "this trip will affect the Indian Point 3 performance indicator for Unplanned Scrams per 7,000 hours."

http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/IP3/ip3_pi.html#IE01 Plants having three or more outages within that time frame have their performance ranking downgraded and receive

increased numbers and types of inspections from federal regulators.

Operators at Indian Point 3 shut down the reactor about 9:30 PM Thursday, Sheehan said, when a plant operator “observed water within the main generator exciter housing, a metal enclosure that surrounds the exciter. Steam generated by the reactor is used to turn the turbine, which in turn powers the generator; the generator sends power to a transformer and from there to the switchyard and from there to the grid.

<http://rogerwitherspoon.com/viewer/vwnukegrphc11.html> .

Entergy officials declined to state how much water was leaking into the area, but David Lochbaum, nuclear safety engineer with the Union of Concerned Scientists, said “it must have been a significant leak. A less severe leak typically allows time for operators to reduce the reactor power level before tripping it. In this case, they had to do it immediately.”

Lochbaum spent most of his career in the nuclear industry as a safety consultant, including a stint working at Indian Point 3, where he was in charge of ensuring their reactor safety systems were updated to meet NRC and license standards. He left the UCS in 2009 to spend a year working for the NRC, updating their operating training manual and teaching reactor safety to agency inspectors.

According to the incident report filed by Entergy, the shutdown of the reactor caused a secondary problem: the transfer of power within the plant from the generator to outside electrical sources did not occur properly and, as a result, one of the four reactor coolant pumps shut off.

Under normal operating conditions, about 10 megawatts of electricity produced by the 1,100-megawatt plant is routed back to Indian Point to maintain its various machines and systems. In the event of a complete power failure, the plant maintains emergency diesel generators so it can always maintain reactor control. It is not known at this point why the transfer to outside power in this case was not seamless.

In addition, instead of cool air circulating within the generator housing, Lochbaum said a feedwater pump serving the main boiler opened, and hot water flowing through that system “flashed to steam. There must have been a lot of steam because fire sensors detected the temperature rise and signaled a carbon dioxide release to put out the fire that didn’t really exist.”

Though the plant’s automated fire detection system thought there was a fire and acted, workers on site knew otherwise and, therefore, no human fire units were mobilized to the scene, Sheehan said.

Over the past two years there have been a series of sudden shut downs at Indian Point. The steam

generators in Indian Point 2 shut down due to erratic water levels April 21, 2008 and April 3 2009, and September 3, 2010; while Indian Point 3 shut down May 15, 28, and 31, 2009.

Presently, both plants at Indian Point are rated “green,” the highest level in the NRC’s color coded matrix of plant operator competence. But they face a demotion as a result of the last two reactor shut downs. The NRC ratings descend from green to white, yellow, and then red. According to the NRC, only seven of the nation’s 104 operating reactors are at the yellow level, and none are “red” a level where the agency is calling the shots on nearly all vital plant operations and can shut it down at any time.

Indian Point 2 had been on the red list from 2000 to 2003. It went from the worst performing plant in the nation to one of its best after Entergy invested \$500 million replacing ageing, defective equipment and completely retraining the staff.