

March 30, 2006

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-III-06-007

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region III staff on this date.

Facility

Braidwood 1 and 2  
Exelon Generation Co.  
Braceville, Illinois  
Docket: 50-456 and 50-457  
License: NPF-72; NPF-77

Licensee Emergency Classification

Notification of Unusual Event  
 Alert  
 Site Area Emergency  
 General Emergency  
 Not Applicable

SUBJECT: TRITIUM CONTAMINATION ISSUES

DESCRIPTION:

Note: This preliminary notification provides additional information on tritium contamination issues which were previously documented in PNO-III-05-016 and four updates to that preliminary notification.

Updated information:

On March 29, 2006, Exelon announced plans to pump water containing tritium from a pond adjacent to the plant site in an effort to reduce the tritium contamination of groundwater in the area surrounding the pond. The water will be pumped into the circulating water discharge line for discharge to the Kankakee River, which will provide significant dilution to the low levels of contamination in the pond. The discharge line is the normal path for liquid radioactive effluents from the plant, under the NRC license and Illinois EPA discharge permit.

The licensee will continue to pump water from the pond to maintain a level about 5 to 7 feet below its current level, which is expected to draw additional contaminated groundwater into the pond for removal and reduce the impact of this contamination on the environment.

State and county approvals are pending for the project. Before any pumping takes place, Region III inspectors and the onsite NRC resident inspectors will review the licensee's leak protection activities for the discharge line, the pond pumping system, leak detection capabilities, and the radiological assessment aspects of the transfer and release. Exelon plans to hold a community information night on April 6 to discuss the plans to pump water from the pond.

On March 24, 2006, the licensee also notified Region III that a small amount of contaminated water was detected in a roadside drainage ditch. The licensee's initial measurements identified tritium contamination at a level of about 1000 picocuries per liter in that water. The source of the water was believed to be a cistern and drain tile on adjacent property which provided a pathway

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for tritium-contaminated groundwater to flow to the ditch. The licensee had previously monitored the ditch and found no detectable tritium, but recent rainfall apparently caused the groundwater flow through the drain tile to the ditch. The licensee has pumped the low-level contaminated water from the ditch and returned it to the plant site for storage.

Background information:

In November 2005, the licensee notified NRC Region III (Chicago) that elevated levels of tritium, the radioactive form of hydrogen, had been identified in onsite monitoring wells. Subsequently, additional monitoring wells were drilled both onsite and offsite. The highest tritium levels measured by the licensee were approximately 247,000 picocuries per liter in both onsite and offsite monitoring wells. Samples from residential drinking water wells in the area have also been analyzed. One showed a level of about 1500 picocuries per liter, less than 10 percent of the EPA drinking water standard of 20,000 picocuries per liter. The remaining wells showed no measurable tritium. NRC Region III has also collected and/or analyzed monitoring well and drinking water well samples. Analyses by an independent laboratory confirmed the levels measured by the licensee.

The groundwater contamination largely results from a 1998 leak of about 3 million gallons of water from a circulating water discharge line from the plant to the Kankakee River, about five miles away. The leak, from a vacuum breaker in the line, was initially onsite, but has migrated with the groundwater offsite to a distance of about 2000 to 2500 feet beyond the Braidwood site boundary. At the time of the 1998 leakage, the licensee did not recognize that the leakage occurred during routine releases of radioactive liquid effluents. Consequently, the water was not analyzed and was allowed to soak into the ground. Another significant leak occurred in 2000. The standing water from the 2000 leak was analyzed, collected, returned to the discharge line to the river, and it is not believed to be a significant contributor to the offsite contamination.

The licensee suspended releases of radioactive effluents in November 2005 and is currently storing liquid effluents in temporary tanks on the Braidwood site.

The State of Illinois has been informed of this updated information. The information in this preliminary notification has been reviewed with licensee management. This information is current as of 12:30 p.m. Central time on March 30, 2006.