

March 15, 2006

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-III-05-016D

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 (4<sup>th</sup> UPDATE)

DESCRIPTION:

On March 13, 2006, the licensee notified the Senior Resident Inspector that contaminated water had been spilled on-site which originated from an on-site tank area where radioactive liquids are currently being stored. The stored liquids are being held in temporary storage tanks, as a result of the licensee's cessation of all liquid radioactive effluent releases after tritium was found in groundwater both on and off the plant site in November 2005.

The licensee estimates that approximately 200 gallons of contaminated water was spilled when a berm surrounding the tank area failed as a result of recent rains and high winds. The contamination apparently resulted from minor leakage from fittings. The leakage then mixed with rainwater.

The licensee's analysis of the water which leaked out of the berm, showed a tritium level of 183,000 picocuries per liter and no other licensed material was detected. Some of this water, remaining on the surface, was collected and pumped to the reinforced berm, and ultimately into a storage tank. The water spilled from the berm, remained in the immediate vicinity, and there was no evidence of an offsite release of the contaminated water.

The leakage was not reportable to the NRC, but the licensee informed State and local officials and issued a news release.

The licensee continues to store contaminated water in temporary 20,000 gallon storage tanks. Tanks are located in one plant building and in the on-site storage area, which contains 13 tanks.

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The licensee continues to assess the past leakage of tritiated water from vacuum breakers along a 5-mile circulating water discharge pipe from the plant to the Kankakee River. Monitoring wells have been drilled near each of the 11 vacuum breakers in the piping system.

The licensee had previously identified tritium in the groundwater adjacent to 3 vacuum breakers (Nos. 1, 2, and 3) on the plant site, ranging from 6,000 picocuries per liter to 58,500 picocuries per liter. The licensee has also measured tritium levels up to about 247,000 picocuries per liter in deeper onsite and offsite wells in the vicinity of vacuum breakers Nos. 2 and 3.

Lower level contamination has been measured in monitoring wells near 3 off-site vacuum breakers (Nos. 4, 6, and 7). No contamination has been found in groundwater near the remaining 5 vacuum breakers.

NRC Region III (Chicago) and the resident inspectors continue to monitor the licensee's activities addressing the tritium issues.

Since early December 2005, the NRC has collected and analyzed 69 samples of groundwater from wells both on and off the Braidwood site in the areas potentially affected by the groundwater contamination. Of these 69 samples, 44 were analyzed by the NRC's independent laboratory both for tritium and for gamma radiation producing materials (principally the radioactive isotopes of cobalt and cesium), and the remainder were analyzed for tritium. Included in the 44 samples with full analysis were 13 samples from offsite residential drinking water wells. Of the 13 residential wells, measurable tritium was found in one well with a level of 1300 to 1500 picocuries per liter of tritium. This is a small fraction of the EPA drinking water standard of 20,000 picocuries per liter. None of the 44 samples showed any detectable radioactive materials other than tritium.

The NRC is beginning to collect and analyze environmental water samples, both groundwater and surface water, at each of the licensee's other facilities in Illinois. This effort will include observation of the licensee's collection of selected environmental samples, NRC independent collection and analysis of certain samples, and analysis of "split" samples. Split samples are samples that are collected by the licensee then are "split" into two or more sample containers. The results of the licensee's analysis are compared with the results of the NRC's independent analysis.

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 2 p.m. on March 15, 2006.