

December 7, 2005

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-RIII-05-016A

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: POTENTIAL OFF-SITE MIGRATION OF TRITIUM CONTAMINATION (UPDATE)

DESCRIPTION:

On December 6, 2005, the licensee notified the NRC that low levels of tritium had been found in a drinking water well at an off-site residence as it continues to evaluate and characterize the migration of tritium in groundwater near the plant. Tritium, which is the radioactive form of hydrogen, occurs in small quantities in nature and is also produced during reactor operations.

The licensee's initial evaluation indicated that the tritium in the groundwater was a result of past leakage from a pipe which carries normally non-radioactive circulating water discharge to the Kankakee River, about five miles from the site. Several millions gallons of water leaked from the discharge pipe in 1998 and 2000. The discharge pipe is also used for planned liquid radioactive effluent releases with the effluent mixing with the circulating water being discharged. (Braidwood, like most nuclear plants, releases small concentrations of radioactive liquids under controlled and monitored conditions and within limits imposed by the NRC.) The licensee is continuing to evaluate the tritium contamination to assure they have identified all possible leakage paths from the circulating water discharge line.

Preliminary sampling results from the drinking water well at a residence about 1/4 mile from the site boundary showed a tritium level of 1,150 picocuries per liter, which is a small fraction of the EPA drinking water standard of 20,000 picocuries per liter. Samples have been collected at several other residential drinking water wells in the area and no measurable levels of tritium above background were found, according to licensee data.

Measurable levels of tritium have been found offsite in shallow monitoring wells drilled last week to assess the tritium movement and in a small pond. The offsite sampling program was initiated after the licensee has measured tritium levels in shallow onsite monitoring wells as high as 58,000 picocuries per liter. The highest level found in an offsite shallow monitoring well is

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34,000 picocuries per liter. These levels of tritium are a small fraction of NRC limits for radioactive effluent releases to the environment and do not represent a health and safety hazard.

Region III dispatched a radiation specialist to the site on December 1, 2005, to assist the NRC resident inspectors in their review of the circumstances surrounding the elevated measurements and the licensee's activities addressing the elevated tritium levels. The NRC has also split samples with the licensee for both drinking water wells and monitoring wells and sent the samples to an NRC contract laboratory for independent analysis. The first results are expected on December 9, 2005. Additional NRC independent samples are planned, and this preliminary notification will be updated as NRC analytical results become available.

The licensee is continuing to evaluate the tritium movement and is developing plans for further monitoring and possible mitigation measures. The licensee issued a news release on December 1, 2005, and has contacted affected property owners as well as State and local officials.

Region III was notified of the initial elevated tritium measurements on November 30, 2005. The information in this preliminary notification has been reviewed with licensee management and is current as of 11 a.m. on December 7, 2005.