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December 7, 2005

Public
Record

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-RIII-

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

R III
Record

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.

January 18, 2006

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

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
(2ND UPDATE)

DESCRIPTION:

As of January 13, 2006, NRC Region III (Chicago) received independent laboratory results of samples that were obtained from 12 residential drinking water wells near the Braidwood facility. The results confirmed that tritium was present in one offsite residential well at levels of about 1300 to 1500 picoCuries per liter, which is a small fraction of the EPA drinking water standard of 20,000 picoCuries per liter. In all other residential wells, no measurable levels of tritium above normal background have been detected. In a deeper onsite groundwater well, the NRC measured tritium as high as 282,000 picoCuries per liter. 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. While that investigation is ongoing, the licensee has suspended all discharges of liquid radioactive effluents through the pipe.

The NRC's independent measurements of licensee's sampling of groundwater and drinking water well samples have been consistent with the licensee results. At the residential well where the NRC found measurable tritium, the licensee reported a tritium level of about 1,500

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picouries per liter. Samples have also been collected at several other residential drinking water wells in the area and no measurable levels of tritium above background were found. The highest level measured by the licensee in an offsite location is about 230,000 picoCuries per liter. This was identified in a deeper offsite monitoring well. The levels of tritium are a 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 inspection staff is continuing to monitor licensee characterization and follow-up efforts (e.g. discharge pipe integrity inspections).

The licensee is continuing to evaluate the tritium movement and is developing plans for further monitoring and possible mitigation measures. The licensee issued news releases on December 1, 2005, and December 29, 2005, and has continued communication with 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 1:30 p.m. (Central Time) on January 18, 2006.

February 3, 2006

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

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.

<u>Facility</u>	<u>Licensee Emergency Classification</u>
Braidwood 1 and 2.	<input type="checkbox"/> Notification of Unusual Event
Exelon Generation Co.	<input type="checkbox"/> Alert
Braceville, Illinois	<input type="checkbox"/> Site Area Emergency
Docket: 50-456 and 50-457	<input type="checkbox"/> General Emergency
License: NPF-72; NPF-77	<input checked="" type="checkbox"/> Not Applicable

SUBJECT: POTENTIAL OFF-SITE MIGRATION OF TRITIUM CONTAMINATION (3rd UPDATE)

DESCRIPTION:

On January 31, 2006, the licensee informed NRC Region III (Chicago) that detectable levels of tritium had been found in groundwater in the Braidwood Dunes Forest Preserve located near the plant site. A groundwater sample from a newly drilled shallow monitoring well showed tritium levels of 24,800 picocuries per liter. The well is adjacent to vacuum breaker No. 4, one of 11 vacuum breakers along the five-mile long circulating water discharge line from the plant to the Kankakee River.

The licensee had previously identified tritium in the groundwater adjacent to three 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. A tritium level of 7,800 picocuries per liter was also measured in groundwater adjacent to vacuum breaker No. 7, which is about 2 miles West of the Kankakee River. Monitoring wells installed near the other six vacuum breakers have shown no measurable levels of tritium. Each of these wells was drilled by the licensee for monitoring purposes and are not used for drinking water.

Previously, samples have also been collected from drinking water wells at residences near the plant. One of the wells has been identified to have measurable tritium above background. Independent laboratory results of a sample collected from this well by the NRC showed 1300 to 1500 picocuries per liter of tritium. This result is a small fraction of the EPA drinking water standard of 20,000 picocuries per liter and, as such, the levels do not represent a health and safety hazard to the public.

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The licensee believes that the tritium in the groundwater is a result of past leakage from a 42-inch pipe and associated vacuum breakers which carry circulating water discharge to the Kankakee River, about five miles from the site. Several million gallons of water leaked from the discharge pipe in 1998 and 2000, and additional smaller leaks have occurred since 1996.

The circulating water discharge line carries water from the plant's cooling lake to the Kankakee River and is also used for periodic discharges of liquid radioactive effluents. The licensee has suspended liquid effluent discharges while investigating the tritium groundwater contamination and is storing tritium-containing water onsite.

The State of Illinois will be informed of this updated information. The licensee has met with local residents to communicate the situation and the licensee's actions. There has been extensive Chicago area news media coverage of the groundwater contamination, and Region III continues to respond to news media inquiries. There has been interest expressed by local officials and legislators with both the nearby Village of Godley and Will County planning public meetings on the issue.

Region III has an ongoing inspection to review of the circumstances surrounding the elevated measurements and the licensee's activities to characterize and address the elevated tritium levels. The NRC has also split samples with the licensee for both drinking water wells and monitoring wells (onsite and offsite) and sent the samples to an NRC contract laboratory for independent analysis. The analyses by the NRC's independent laboratory have been consistent with those of the licensee.

The information in this preliminary notification has been reviewed with licensee management and is current as of 2 p.m. on February 3, 2006.