From: Jan Strasma R3
To: Steven Orth
Date: 3/2/06 4:07PM
Subject: Region III Tritium Background Info

Steve -

Let me know what the accession number for the document is when you have it entered into ADAMS so I can provide it to NRR to be included in the tritium web page.

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RC NEWS

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March 2, 2006

NRC REGION III TRITIUM INSPECTION ACTIVITIES

NRC Region III (Chicago) is reviewing tritium-related issues at Illinois nuclear power plants after groundwater contaminated with tritium was discovered offsite at the Braidwood Nuclear Power Station in November 2005. Braidwood and the other nuclear plants in Illinois are operated by Exelon Generation Co.

Tritium is a radioactive form of hydrogen. Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced as a byproduct of the operation of nuclear power reactors and during nuclear weapons explosions. According to the Environmental Protection Agency, tritium is one of the least dangerous radioactive materials because it emits very weak radiation and leaves the body relatively quickly. The EPA has established drinking water standards for tritium to minimize the risk of exposure to water containing tritium.

Braidwood

Exelon has collected groundwater samples from numerous monitoring wells on and near the Braidwood site which confirm the migration of tritium-containing water from an area where leaks have occurred in a 42-inch diameter pipe which carries cooling water discharge to the Kankakee River. This pipe, though usually carrying non-radioactive water, has been used periodically for the release of low-level radioactive effluent from the plant, which is permitted under limits and conditions imposed by the NRC. Significant leaks in the pipeline occurred in 1996, 1998, and 2000.

On Nov. 30, 2005, Exelon informed the NRC that it had detected elevated tritium levels in recently installed monitoring wells on the site and that tritium-bearing groundwater may have migrated off the site to the north.

The NRC promptly began inspection activities to assess the groundwater conditions and review Exelon's activities in response to the problem. These inspection activities were carried out by radiation specialists from the Region III office as well as the two NRC resident inspectors assigned to the

Braidwood site. The NRC collected and analyzed independent samples of some area residential wells and, in addition, analyzed "split" samples of groundwater collected by Exelon. The results of the NRC "split" sample analysis have been consistent with Exelon's laboratory results. Initial inspection findings, through Dec. 31, are contained in Inspection Report 05-10, which is available on the NRC web site.

In mid-February the NRC began an additional inspection focusing on the leaks from the circulating water discharge line beginning in 1996 – what information was available at the time, what actions Exelon took, and what followup activities occurred. This inspection is scheduled to be completed in early March with the inspection report expected to be issued in early April.

Braidwood, like most nuclear plants, has been releasing water containing low levels of radioactivity under controlled and monitored conditions. These releases have be halted since late November while the company reviews its release procedures and verifies the integrity of the pipeline to the Kankakee River. In addition to liquid effluents, nuclear plants also release gaseous radioactivity after it has been filtered and monitored.

Byron

Because the Byron Nuclear Power Station has a circulating water discharge line similar to that at Braidwood, the NRC resident inspectors are monitoring Exelon's activities there to determine what leakage may have occurred there and if there has been any possible groundwater contamination. Exelon has identified measurable levels of tritium in water standing in the concrete vaults surrounding the vacuum breakers, the same types of valves which caused the leaks at Braidwood. The company is installing monitoring wells nearby to determine if there has been any migration of tritium-bearing water outside the vaults.

The NRC will be collecting independent samples and "split" samples of residential drinking water wells in the Byron plant area to determine if there is any measurable tritium.

Dresden

The NRC inspectors at the Dresden Nuclear Power Station are assessing a leak in an underground pipe which resulted in tritium-bearing water being released to a small area on the plant site – about 30 feet square. This leak, which was reported to the NRC on Feb. 10, was in an underground pipe from a large water storage tank into the plant. Exelon replaced a portion of the pipe in 2004 when it developed a leak, and planned to replace the remained of the pipe in June. The leaking pipe was isolated by closing valves and drained to prevent further leakage.

Other Illinois Nuclear Plants

NRC's resident inspectors at the other nuclear power plant sites in Illinois – LaSalle, Quad Cities, and Clinton – are also gathering information about how tritium-bearing water is handled on each site and whether there have been leaks or unplanned releases of tritium-bearing water in the past. The NRC will also observe Exelon's collection of certain groundwater samples at these plants and collect "split" samples for analysis by the NRC's independent laboratory. These reviews and sample collection are part of the day-to-day NRC inspection activities at the plant and will not result in a separate inspection report. Any inspection findings will be documented in the resident inspector's quarterly reports which will be available on the NRC web site.

NRC Documents Online:

Preliminary Notifications with additional details on Braidwood, Dresden, and Byron:

http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/ – Select 2005 for Braidwood, 2006 for Dresden and Byron

NRC Inspection Reports
http://www.nrc.gov/info-finder/reactor/ - Select the reactor site from the alphabetical list, and then select inspection reports from the list of links.

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