Issue/Title: Pilgrim Nuclear Power Station (PNPS): Tritium in Groundwater Monitoring Wells

Topic: PNPS Updates as of November 19, 2010

Previous Plans: Results from groundwater monitoring well samples and surface water samples taken during weeks of October 25th and November 1st, 2010, were reported by Entergy (see tables below). Splits of samples collected on October 25th are currently being analyzed by MERL.

Current Status:

Table 1[1]: October 25th

Location	Date	MERL[2] pCi/L	GEL[3] pCi/L
MW 201	9/20/2010	**	1340
MW 202	9/20/2010	**	NDA<390
MW 202 I	9/20/2010	**	NDA<390
MW 203	9/20/2010	**	**
MW 204	9/20/2010	**	**
MW 205	9/20/2010	**	**2840**
MW 206	9/20/2010	**	**12200**
MW 207	9/20/2010	**	**
MW 208-S	9/20/2010	**	**
MW 208-I	9/20/2010	**	**
MW 209 **new**	9/20/2010	**	1710
MW 210 **new**	9/20/2010	**	837
MW 211 **new**	9/20/2010	**	870
MW 212 **new**	9/20/2010	**	568
MW 213 **new**	9/20/2010	**	**
MW 214 **new**	9/20/2010	**	**
MW 3	9/20/2010	**	**
MW 4	9/20/2010	**	**
SW-boat ramp	9/20/2010	**	**
SW-intake	9/20/2010	**	**

Table 2: November 1st

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	9/27/2010	**	1020
MW 202	9/27/2010	-	-
MW 202 I	9/27/2010	-	-
MW 203	9/27/2010	-	-
MW 204	9/27/2010	-	-
MW 205	9/27/2010	**	**16700**
MW 206	9/27/2010	**	**13600**
MW 207	9/27/2010	-	-
MW 208-S	9/27/2010	-	-
MW 208-I	9/27/2010	-	-
MW 209 **new**	9/27/2010	-	-
MW 210 **new**	9/27/2010	-	-
MW 211 **new**	9/27/2010	-	-
MW 212 **new**	9/27/2010	-	-
MW 213 **new**	9/27/2010	-	-
MW 214 **new**	9/27/2010	-	-
MW 3	9/27/2010	-	-
MW 4	9/27/2010	-	-
SW-boat ramp	9/27/2010	**	NDA<312
SW-intake	9/27/2010	**	NDA<339

*** NDA = not detected at less than activity value listed**
**** results pending**
- not analyzed this week

[1] PNPS screening level for tritium in groundwater monitoring wells is 3,000 pCi/L, which is 1/10th of the NRC-approved Pilgrim Offsite Dose Calculation Manual standard for tritium in non-drinking water sources. The EPA drinking water standard is 20,000 pCi/L. The nearest drinking water wells are approximately 2.5 miles from the plant.

[2] Results from the Massachusetts Environmental Radiation Laboratory (MERL)

[3] GEL Laboratories are a radioanalytical laboratory contracted by PNPS

A full round of samples were collected from all groundwater monitoring wells and surface water on October 25th. Results from the MERL lab for this batch of water samples are still pending as are some results from Pilgrim's lower priority wells for this sampling round. Both labs have reported their final results for the wells of most concern (i.e., MW201, MW205, and MW206) from the November 1st sampling round. Of greatest interest was the increase in tritium in MW205 from 2,840 pCi/L detected in samples collected on October 25, 2010 to 16,700 pCi/L in samples collected November 1, 2010. This level of fluctuation is similar to that observed in September and October and continues to be a focus of investigation efforts. Levels of tritium in MW206 showed a slight increase between the two sampling weeks with 12,200 pCi/L of tritium detected in samples collected on October 25, 2010 and 13,600 pCi/L detected in samples from November 1, 2010. No samples were collected the week of November 8th due to inclement weather conditions, but a complete round of samples were collected from all 18 groundwater monitoring wells and two surface water locations on November 15th.

Entergy has initiated steps to evaluate the feasibility of collecting soil samples in and around MW205 and MW206 to investigate the possible theory that the tritium detected in these wells is the result of some historical subsurface contamination that is being mobilized due to fluctuations in the depth of the groundwater table. This so-called "tea bagging" effect has been linked to fluctuating concentrations of tritium in groundwater at other nuclear plant sites. Entergy's technical team will be conducting a feasibility study to determine safe methods to proceed with soil sampling near MW205 and MW206 without causing damage to underground piping in these areas.

Implementation of the dye testing process is underway. This past week, charcoal bags were placed in all groundwater monitoring wells, and PNPS also began the process of placing them in storm drains. Access to the storm drains will be a slower process because it requires the coordinated removal and unlocking of security barriers that are in place to prevent storm drain access. PNPS recently received approval from both EPA and DEP to proceed with using the dyes selected for the testing, ensuring that the process will not present any environmental discharge permit concerns. Entergy plans

to start introducing the dyes the week of December 6th. As confirmed by the NRC, this type of testing was used successfully at one of Entergy's other plants, Indian Point Energy Center in New York, in identifying the source of a tritium leak at that plant. For Indian Point, it took several months before they were able to conclude anything from the dye testing due to the slow rate of groundwater flow. Given what is known about groundwater flow rates at PNPS, a similar time frame for results may be expected.

This week, Entergy began conducting ultrasonic testing on the above ground portion of the Condensate Storage Tank (CST) piping to further evaluate anomalies previously detected with the guided wave testing. As previously reported, Entergy does not believe these anomalies are potential leak sources; they are conducting the ultrasonic testing to confirm this. They will be able to determine the thickness of the pipe from this test and compare results to the original specifications when that pipe was installed, ultimately telling them whether or not that pipe is showing any signs of degradation.

As previously reported, Entergy also plans to further explore the possibility that condensate generated from their roof air conditioning systems may concentrate permitted air emissions of tritium into storm water, which may ultimately impact tritium levels in groundwater. Entergy was directed to undertake these activities by the NRC. However, due to the season, the air conditioning units are not in use. In the meantime, Entergy is working on a more permanent mechanism for collecting samples of rainwater run-off by installing stationary samplers on the roof.

Looking Forward:

MDPH/BEH has scheduled a follow-up meeting for early December with MassDEP and MEMA to discuss the information presented during the October 15, 2010, site visit and groundwater investigation efforts since that meeting.