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

Topic: PNPS Updates as of February 4, 2011

Previous Plans: Results from groundwater monitoring well samples and surface water samples collected during the weeks of January 10th and January 17th, 2010, were reported by Entergy (see tables below). Split samples for the week of January 10th have been reported from MERL and split samples for the week of January 17th are currently being analyzed by MERL.

Current Status:

Table 1[1]: January 10th

Location	Date	MERL[2] pCi/L	GEL[3] pCi/L
MW 201	1/10/11	888	928
MW 202	1/10/11	NDA<300	308
MW 202 I	1/10/11	399	365
MW 203	1/10/11	NDA<300	**
MW 204	1/10/11	497	**
MW 205	1/10/11	**2836**	**2430**
MW 206	1/10/11	**4016**	**3700**
MW 207	1/10/11	497	**
MW 208-S	1/10/11	NDA<300	**
MW 208-I	1/10/11	NDA<300	**
MW 209 **new**	1/10/11	1371	1370
MW 210 **new**	1/10/11	637	769
MW 211 **new**	1/10/11	1141	927
MW 212 **new**	1/10/11	549	583
MW 213 **new**	1/10/11	315	**
MW 214 **new**	1/10/11	NDA<300	**
MW 3	1/10/11	NDA<300	**
MW 4	1/10/11	473	**
SW-boat ramp	1/10/11	NDA<300	**
SW-intake	1/10/11	NDA<300	**

Table 2: January 17th

Location	Date	MERL pCi/L	GEL pCi/L
MW 201	1/17/11	-	928
MW 202	1/17/11	-	-
MW 202 I	1/17/11	-	-
MW 203	1/17/11	-	-
MW 204	1/17/11	-	-
MW 205	1/17/11	**-**	**7240**
MW 206	1/17/11	**-**	**3450**
MW 207	1/17/11	-	-
MW 208-S	1/17/11	-	-
MW 208-I	1/17/11	-	-
MW 209 **new**	1/17/11	-	-
MW 210 **new**	1/17/11	-	-
MW 211 **new**	1/17/11	-	-
MW 212 **new**	1/17/11	-	-
MW 213 **new**	1/17/11	-	-
MW 214 **new**	1/17/11	-	-
MW 3	1/17/11	-	-
MW 4	1/17/11	-	-
SW-boat ramp	1/17/11	-	-
SW-intake	1/17/11	-	-

*** 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

The latest groundwater monitoring results reported by Entergy and summarized above show that MW205 has increased from 2,430 pCi/L of tritium detected on January 10th to 7,240 pCi/L of tritium detected on January 17th. Results for MW206 decreased slightly from 3,700 pCi/L of tritium detected on January 10th to 3,450 pCi/L detected on January 17th. Results for MW201 remained generally consistent with previous sampling rounds with tritium detected at slightly less than 1000 pCi/L. MERL has also reported their final sampling results for the week of January 10th which are summarized in the table. As with previous results, MERL results were fairly consistent with those reported from Entergy. Results for the remaining groundwater monitoring wells have continued to remain generally consistent over time and surface water samples were again non-detectable. For the week of January 17th, Entergy did not collect surface water samples due to hazardous weather conditions.

As part of their precipitation monitoring efforts, Entergy also recently collected samples of snow at PNPS. Snow samples are being analyzed for tritium to explore the possible theory that tritium concentrates in snow. Results of snow analyses will be reported in a future update when they become available.

Through a redirection of resources, MDPH hired an environmental scientist who is devoted fulltime to the tritium investigation and the review of environmental monitoring data in Massachusetts Emergency Planning Zones. On Friday, February 4, representatives from MDPH/BEH, MEMA, and MDEP met with Entergy and NRC representatives at MDPH. The meeting included presentations by Entergy staff and their hydrogeology consultants, ERM. Presentations at the meeting included but were not limited to descriptions of the latest groundwater and surface water results, the dye testing that is currently in progress, and the soil sampling which is planned to begin in late February (weather permitting). Entergy also described their routine effluent and environmental monitoring programs that are required to be reported to the NRC annually. The hydrogeology presentation included discussion of an initial analysis of groundwater levels, rainfall, and tritium levels. ERM, the hydrogeology consultants,

continue to evaluate whether tritium concentrations fluctuate with rainfall amounts and groundwater levels. There continues to appear to be no correlation between rainfall, groundwater levels, and tritium concentrations in the wells based on analysis of sampling to date.

The dye testing is proceeding as planned at PNPS. As previously reported, dyes were introduced in three possible source locations in mid-January and a fourth dye will be introduced to into the French drain system near the condensate storage tanks later this month. The decision to delay the fourth dye injection was made because they did not want the dye injected to this system to mask anything that might be attributed to dyes from the other three possible source areas. Charcoal bags designed to detect the dyes are being collected from the groundwater monitoring wells (and replenished) on a weekly basis and grab samples are also being collected to detect whether the dyes are present in the groundwater. Based on the average rate of groundwater flow at PNPS, Entergy and their hydrogeological consultants expect that the dyes could be detected in MW206 sooner than detections in the other wells which are not expected to see results until the April/May timeframe at the earliest.

The third party review report of the ultrasonic testing and the guided wave tests on the Condensate Storage Tank line is still being reviewed by Entergy's engineering group, and results will be made available to MDPH when their review is complete. As previously noted, Entergy has reported that initial results from the 3rd party review indicate no significant anomalies that would suggest a source for the tritium in groundwater. It should be noted that while ultrasonic testing is considered a standard tool in the nuclear industry, guided wave testing is new to the industry and the NRC does not recognize it as an established tool for determining leaks.

Looking Forward:

Snow tritium sampling results should be coming in with the next set of data. Also, additional meetings between MDPH, MEMA, MDEP, NRC and Entergy will be scheduled as needed in the future.