

December 16, 2008

MEMORANDUM TO: R. William Borchardt  
Executive Director for Operations

THRU: Eric J. Leeds, Director */RA/ Original Signed By:*  
Office of Nuclear Reactor Regulation

FROM: Samuel J. Collins */RA/ Original Signed By:*  
Regional Administrator  
Region I

SUBJECT: REQUEST FOR RENEWAL OF DEVIATION TO THE ACTION  
MATRIX TO PROVIDE HEIGHTENED NRC OVERSIGHT OF  
ONSITE GROUND WATER MONITORING AT THE INDIAN  
POINT ENERGY CENTER

This memorandum requests your approval to continue to deviate from the Reactor Oversight Process (ROP) Action Matrix for the Indian Point Energy Center to provide heightened NRC oversight of on-site ground water monitoring activities throughout calendar year 2009. This action is requested to continue the deviation that was approved on October 28, 2005, renewed on December 11, 2006, and on December 19, 2007, because some exit criteria in the prior deviation related to ground water monitoring have not been met and the unique factors warranting a deviation from the ROP continue in 2009. This deviation is reduced in scope from prior years because the exit criteria related to the replacement alert and notification system have been met and the ROP is appropriate and sufficient to monitor performance in this regard. We intend to continue to monitor the licensee's actions to address issues associated with on-site ground water contamination characterization and mitigation. The actions we propose in this memorandum for Indian Point Energy Center represent a customized approach that considers factors beyond each unit's Action Matrix categorization. This approach is consistent with underlying concepts of Inspection Manual Chapter 0305, "Operating Reactor Assessment Program."

### Background

#### Ground Water Contamination Issue

On September 1, 2005, the NRC was informed by Entergy that cracks in a Unit 2 spent fuel pool wall had been discovered during excavation work inside the spent fuel pool building. Low levels of radioactive contamination were found in the vicinity of the crack. Entergy's initial investigation of the issue revealed that ground water in the vicinity was contaminated with tritium. On September 20, 2005, Region I initiated a special inspection of this matter to examine the licensee's performance and determine if the contaminated ground water affected, or could affect, public health and safety. Subsequently, Entergy initiated actions to perform a comprehensive ground water site characterization, identify the sources, and effect mitigation and remediation of the condition.

The NRC special inspection report, issued in March 2006, assessed Entergy's performance, achievements, and plans for more extensive site characterization, and reported that the ground water contamination did not, nor was likely to, adversely affect public health and safety. In the report, and subsequent public meetings, NRC indicated that a final conclusion would be reached after Entergy completed its ground water characterization initiative.

The NRC Region I continued inspection and monitoring of Entergy's activities in accordance with an approved deviation to the normal Reactor Oversight Process for calendar years 2006, 2007 and 2008. The NRC staff closely monitored Entergy's ground water characterization efforts, performed independent inspection and testing, and evaluated radiological and hydrological conditions affecting ground water onsite. Additionally, the NRC independently verified ground water releases by conducting split monitoring well sampling with Entergy and the State of New York.

On January 11, 2008, Entergy submitted the results of its comprehensive hydrogeologic site characterization investigation (ML080320600), and included its plan for remediation and long-term monitoring of the on-site ground water conditions. In its report, Entergy described the source of ground water contamination to be from the Unit 1 and Unit 2 spent fuel pools. The NRC reviewed the results of the report and issued inspection report 05000247 & 05000003/2007010 on May 13, 2008 (ML081340425). The NRC staff confirmed that the ground water contamination did not adversely affect public health and safety; and determined that the licensee's plans to terminate the source of the Unit 1 plume and continue monitoring the natural attenuation of existing in-ground contaminants was reasonable.

On November 3, 2008, Entergy completed Unit 1 spent fuel pool system drainage and sludge removal activities, essentially terminating the source from that facility. Given the change in conditions, Entergy intends to establish a new ground water contaminant baseline in order to enhance its long-term monitoring program.

Relative to the Unit 2 spent fuel pool condition; Entergy has repaired all identified liner indications that were potential contributors to leakage from that facility. However, as indicated in the NRC inspection report, examination of the liner surfaces was limited due to the current storage of spent fuel. Accordingly, it remains for Entergy to determine if the results of on-going ground water monitoring provide a reasonable basis to conclude that active leakage has been terminated from the Unit 2 spent fuel pool.

#### Alert and Notification System (ANS) Issue

Prior approved ROP deviations for the Indian Point Energy Center provided for additional inspection activities related to the replacement ANS. In accordance with the approved deviations, NRC Region I completed additional inspections and oversight of Entergy's performance related to the replacement ANS. On August 22, 2008, the Federal Emergency Management Agency approved the design of the replacement ANS and Entergy placed the system in service on August 27, 2008. Entergy successfully completed system reliability testing on September 24, October 22, and November 20, 2008. The NRC Region I conducted appropriate inspections of these activities. With the completion of these activities the exit criteria related to the ANS Issue in prior deviations have been met. The ROP and the enforcement process are appropriate and sufficient to monitor future performance in this regard and a deviation is not requested for this issue.

The December 17, 2007 deviation memo established the following exit criteria to return to NRC monitoring efforts consistent with the Action Matrix:

- Entergy has completed characterization of the onsite contaminated groundwater condition, and established appropriate measures to effect mitigation and monitoring of the condition, including formal procedures, processes and controls.
- Entergy has formalized changes to its environmental monitoring program to provide early detection of groundwater contamination that has the potential to migrate to the environment.
- Entergy has taken reasonable actions to determine the source(s) of the current groundwater contamination and has addressed the condition.
- Entergy has installed, and placed in-service, the new ANS in accordance with the FEMA-approved Prompt Alert and Notification System Design Report.
- Entergy has successfully completed testing of the ANS as described in paragraphs II.C.3, II.C.4, and II.C.5 of the NRC's Confirmatory Order dated January 31, 2006.

Entergy has met exit criteria 1, 4, and 5 as discussed above. However, exit criteria 2 and 3 can not be considered met until a new long term monitoring baseline is established given the termination of the Unit 1 source term. Entergy intends to establish a new ground water contaminant baseline in order to enhance its long-term monitoring program and make a more accurate assessment of leakage from the Unit 2 spent fuel pool.

#### Deviation Basis

The ROP Action Matrix includes a range of licensee and NRC actions for each column of the Action Matrix. However, as discussed in Inspection Manual Chapter 0305, there may be instances in which the actions prescribed by the Action Matrix may not be appropriate. In the case of Indian Point Energy Center, the actions associated with the Licensee Response Column do not provide for the specific focus and level of oversight needed to appropriately monitor licensee efforts to address the ground water contamination issue. Therefore, Region I believes that continued heightened oversight as discussed in the following sections should be performed at a level of effort above that of the Licensee Response Column for Indian Point Energy Center throughout calendar year 2009.

Overall, Entergy's operation of both units at Indian Point Energy Center is acceptable, with both units currently in the Licensee Response column of the Action Matrix. However, ongoing issues associated with ground water contamination present unique challenges to the NRC's regulatory oversight of Indian Point Energy Center. This inspection program deviation is needed to ensure that the NRC can continue to inspect Entergy's resolution of the ground water remediation efforts, and communicate the issues to interested stakeholders. Baseline inspections that address aspects associated with ground water monitoring and effluent control (i.e., 71122.01, Gaseous and Liquid Radiological Effluent Controls, and 71122.03, Radiological Environmental Monitoring Programs) are biennial inspection activities, with a combined resource allocation of about 76 direct inspection hours. Only inspection procedure 71122.01 remains to be completed in CY2009, which provides about ten hours of inspection effort for ground water monitoring

program review. Accordingly, there are limited baseline inspection hours available to address ground water aspects in CY2009. Additionally, the baseline inspection program does not provide any resource to support ground water split sampling with the State of New York and Entergy, an activity that provides for independent assessment of licensee performance in developing and implementing their long term monitoring program.

To date, Entergy has demonstrated satisfactory performance in addressing the contaminated ground water conditions by completing a comprehensive site characterization, enhancing the sensitivity of its environmental monitoring program, determining the sources of contamination, and establishing remedial actions. These actions partially address the exit criteria documented in the December 19, 2007 Deviation memo extension.

However, some processes and procedures, important to the overall effectiveness and quality of Entergy's long-term monitoring program, were not sufficiently developed and implemented in time for the NRC to assess effectiveness in CY 2008. Accordingly, Entergy's performance remains to be assessed relative to its successful integration of all program elements necessary to effectively implement and maintain a long-term monitoring program to: verify the expected natural attenuation of residual ground water; monitor ground water conditions to assure the continued validity of the site conceptual model; assure that liquid radiological effluent release via the ground water pathway is acceptably determined relative to NRC regulatory requirements; and detect changes in ground water conditions.

To this end, Region I recommends deviation from the Reactor Oversight Program baseline inspection to accommodate a team inspection in the Summer of CY2009 to review Entergy's establishment, implementation, and maintenance of its long-term monitoring program; and to continue limited split sampling through CY 2009 to verify the quality of Entergy's analysis of selected ground water samples. The Office of Research has agreed to support such an inspection effort with a hydrological specialist; and the Office of Nuclear Reactor Regulation has established a contract with an independent laboratory to analyze a limited quantity of split samples.

This inspection activity would represent approximately 300 person hours for direct inspection effort, inspection preparation and documentation, and communication activities. Expected sample analysis costs that would be charged to the existing NRR radiological analysis contract with American Radiation Services, International, is expected to be approximately \$16,000. Given the observed steady improvement in Entergy's analytical quality assurance, it is likely that continued independent split sampling activities will not be necessary beyond CY 2009.

### Planned Actions

#### A. Deviation Request

The NRC Region I requests your approval to continue to deviate from the ROP Action Matrix to provide the following oversight for Indian Point Energy Center throughout calendar year 2009.

#### Ground water Contamination Inspection Effort

- The NRC Region I staff will inspect and assess Entergy's ground water monitoring program efforts and verify that Entergy's plans for long term monitoring of ground water conditions are effective relative to assessment of monitored natural attenuation following

the expected termination of leakage from the Unit 1 spent fuel pool system, and the presumed termination of leakage from the Unit 2 spent fuel pool.

- The NRC Region I staff will continue limited split sampling of selected monitoring wells, quarterly, through CY 2009, to verify the quality of Entergy’s analytical capability. The Office of Nuclear Reactor Regulation (NRR) and Region I have agreed on the scope of the confirmatory samples in FY2009, and NRR has established a contract with an independent laboratory to provide analysis of the samples.

The proposed effort associated with enhanced monitoring of the Indian Point Energy Center ground water contamination issue is estimated to involve approximately 0.25 full time equivalent staff (FTE) for calendar year 2009. This effort represents a small fraction of the Region’s budget for plant specific and supplemental inspection activities; and with current projections, can be accommodated within the existing budget projections for CY 2009.

Return to Normal NRC Monitoring

The staff will consider exit criteria 2 and 3 of the December 17, 2007 deviation memo complete and plans to return to normal NRC monitoring efforts consistent with the Action Matrix upon confirmation of the following:

- Entergy has completed sufficient data collection and assessment to establish a new groundwater contaminant baseline, now that the Unit 1 source term has been terminated.
- Entergy has determined whether active leakage has been terminated or continues to persist in regard to the Unit 2 spent fuel pool; and has implemented appropriate monitoring and control measures, as necessary.
- Entergy has established and implemented effluent control and environmental monitoring procedures that provide reasonable assurance that the existing ground water conditions will continue to be effectively monitored and assessed, that the procedures will detect new or changed conditions in a timely manner, and that the procedures are sufficient to monitor natural attenuation of the Unit 1 and Unit 2 groundwater contamination plumes.

Consistent with the SRM dated May 27, 2004, we will provide a copy of this Deviation Memorandum to the Commission and discuss the deviation at the next Agency Action Review Meeting. Pending your approval, the NRC staff will develop a communication approach to ensure that the licensee and stakeholders are appropriately informed.

Approve/Disapprove: /RA/ Original Signed By: 12/18/08  
R. William Borchardt Date

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Distribution: See next page

**SUNSI REVIEW COMPLETED BY:**  MXG\* (Reviewer's Initials)

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\*See Prior Concurrence Pages

Memo to R. William Borchardt from Samuel J. Collins dated December 16, 2008.

SUBJECT: REQUEST FOR RENEWAL OF DEVIATION TO THE ACTION MATRIX TO  
PROVIDE HEIGHTENED NRC OVERSIGHT OF ONSITE GROUND WATER  
MONITORING AT THE INDIAN POINT ENERGY CENTER

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