April 11, 2014

MEMORANDUM TO: Undine S. Shoop, Chief
Radiation Protection and Consequences Branch
Division of Risk Assessment
Office of Nuclear Reactor Regulation

FROM: Steven M. Garry, Senior Health Physicist ***/RA/***
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SUBJECT: ROLL-UP RESULTS OF TEMPORARY INSTRUCTION 2515/185, "FOLLOW-UP ON THE INDUSTRY'S GROUND WATER PROTECTION INITIATIVE"

Temporary Instruction (TI) 2515/185, "FOLLOW-UP ON THE INDUSTRY'S GROUND WATER PROTECTION INITIATIVE" was completed with the objective of assessing and verifying the industry's completion of the Ground Water Protection Initiative (GPI). The inspection determined all nuclear power plant licensees (except Fitzpatrick, Cooper and Waterford) had completed implementation of the GPI objectives that were previously identified as incomplete by TI-2515/173. The remaining incomplete items from those 3 licensees have been entered into the licensee's corrective action programs as shown in Enclosure 1.

Enclosures:
As stated

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Roll-Up of Temporary Instruction (TI) 2515/185, "Follow-Up on the Industry's Ground Water Protection Initiative"

Background:

As a result of ground water contamination events, each nuclear power site developed a site-specific/company ground water protection program in accordance with NEI document, NEI 07-07, "Industry Ground Water Protection Initiative – Final Guidance Document," August 2007 (ML072610036). Temporary Instruction (TI) 2515/173, "Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative, Revision 1," was issued on October 31, 2008 to evaluate the licensee's implementation of the industry's ground water initiative.

During a period of about two years (August 2008 and August 2010), NRC inspectors assessed each site's implementation of the initiative using TI 2515/173 – Revision 1. Results of the inspections were documented in the report "Summary of Results from Completion of NRC's Temporary Instruction on Ground Water Protection, TI-2515/173 Industry Ground Water Protection Initiative" (ML11088A047).

The TI 2515/173 summary report identified several plants that lacked full implementation of the industry's ground water protection initiative. Therefore, the purpose of this TI 2515/185 was to assess the completion of the ground water initiative for those plants identified in the TI 2515/173 summary report as having 5 or more incomplete elements of the industry's initiative. For licensees with four or less incomplete program elements, NRC staff will perform the follow-up inspections using IP-71124.06, "Radioactive Gaseous and Liquid Effluent Treatment."

RESULTS OF TI 2515/185

This TI was initiated on November 15, 2011 and completed on December 31, 2012. The following plants were inspected for the listed GPI objectives as follows:

Plant	GPI Objectives	Completed	Incomplete
Fitzpatrick	(GPI Objectives 1.2, 1.3 and 1.4)	1.2, 1.4	1.1, 1.3 (NRC Region I is periodically reviewing licensee progress in completion of these objectives.
Ginna	(GPI Objectives 1.1, 1.2 and 1.3)	1.1, 1.2, 1.3	None
Oyster Creek	(GPI Objectives 1.2, 1.3, 1.4, 3.1 and 3.2)	1.2, 1.3, 1.4, 3.1, 3.2	None
Peach Bottom	(GPI Objectives 1.2, 1.3 and 3.2)		None
Three Mile Island	(GPI Objectives 1.2, 1.3,1.4,1.5 and 3.2)	1.2, 1.3, 1.4, 1.5, 3.2	None
Kewaunee	(GPI Objectives 1.2,1.4, 1.5 and 2.1)	1.2, 1.4, 1.5, 2.1	None

Perry	(GPI Objectives 1.1, 1.2, 1.3, 1.4 and 2.2)	1.2, 1.4, 1.5, 2.1	None
Arkansas	Nuclear (GPI Objectives 1.2, 1.3, 2.2 and 2.4)	1.2, 1.3, 2.2, 2.4	None
Callaway	(GPI Objectives 1.2, 1.3 and 1.4)	1.2, 1.3, 1.4	None
Columbia	(GPI Objective 1.2)	1.2	None
Cooper	(GPI Objectives 1.1, 1.2,1.4 and 2.4)	1.1, 1.4, 2.4	1.2.f Its completion is being tracked in Condition Report (CR)-CNS-2009-03669.
Diablo Canyon	(GPI Objectives 1.2, 1.4, 2.2 and 3.1)	1.2, 1.4, 2.2, 3.1	None
River Bend	(GPI Objectives 1.1, 1.2, 1.3, 1.4 and 3.1)	1.1, 1.2, 1.3, 1.4, 3.1	None
Waterford	(GPI Objectives 1.1, 1.2, 1.3, 1.4 and 3.1)	1.2, 3.1	1.3.f CR-WF3-2012-02751, CR-WF3-2012-2752, CR-HQN-2012-00673 1.4.a CR-WF3-2012-02757, CR-HQN-2012-00676

Following the inspection of completion of each of the above objectives, the regional staff prepared an individual report for each plant (see Enclosure 2). A review of those plant report excerpts shows that the industry has completed implementation of the GPI with the exceptions note in the table above. Detailed information and identified exceptions to full implementation of the GPI for each plant are noted in the individual plant reports provided in Enclosure 2.

REGION I - FITZPATRICK
DRS INPUT TO INTEGRATED REPORT 05000333/2012004

4OA5 Other (TI 2515/185)

a. Inspection Scope

During the period August 6, 2012 through August 10, 2012, the inspector conducted the following activities to confirm FitzPatrick's implementation of the voluntary Groundwater Protection Initiative.

GPI Objective 1.1 – Site Hydrology and Geology

- The inspector could not verify that a hydrology and geologic study was performed by an outside contractor to determine the predominant groundwater flow characteristics and gradients. The contractor has not issued a report as of the date of this inspection.
- The inspector could not verify the study was reviewed by a knowledgeable utility employee.
- The inspector could not verify that potential pathways have been identified for groundwater migration from on-site locations to off-site locations through groundwater.
- The inspector could not verify that a five (5) year frequency has been established in FitzPatrick's procedures for periodic review of the hydro geologic studies.
- The inspector could not verify that no changes were required to the Updated Final Safety Analysis Report.

GPI Objective 1.2 – Site Risk Assessment

- The inspector verified that FitzPatrick has identified Structures, Systems, and Components (SSCs) and work practices that involve or could reasonably be expected to involve licensed material and for which there is a credible mechanism for licensed material to reach groundwater.
- The inspector verified that FitzPatrick has identified leak detection methods for each of the SSCs and work practices that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for licensed material to reach groundwater.
- The inspector verified that potential enhancements to the leak detection systems or programs have been identified.
- The inspector verified that potential enhancements have been identified to prevent leaks and spills from reaching groundwater.
- The inspector verified that FitzPatrick's corrective action program will be used to identify and track corrective actions.
- The inspector verified a long term program has been established to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- The inspector verified that a five (5) year frequency has been established in FitzPatrick's procedures for periodic review of SSCs and work practices.

GPI Objective 1.3 – On-Site Groundwater Monitoring

- The inspector could not verify FitzPatrick has considered the placement of monitoring wells down gradient from the plant but within the site boundary.
- The inspector verified that FitzPatrick considered placing sentinel wells closer to SSCs that have the highest potential for inadvertent releases that could reach groundwater.
- The inspector verified that FitzPatrick has established sampling and analysis protocols, including analytical sensitivity in site procedures.
- The inspector verified that a formal written program has been established for long term groundwater monitoring. The inspectors verified that the ODCM has not been revised, per the recommendation of Nuclear Energy Institute (NEI), to include groundwater monitoring as the monitoring locations are not included in the Radiological Environmental Monitoring Program (REMP).
- The inspector verified that the analytical capabilities are periodically reviewed as part of the analytical cross check program.
- The inspector could not verify that a long-term program has been established in FitzPatrick's procedures for the groundwater monitoring wells.
- The inspector could not verify a frequency has been established in FitzPatrick's procedures for the periodic review of the groundwater monitoring program.

GPI Objective 1.4 – Remediation Process

- The inspector verified that written procedures have been established outlining the decision making process for the remediation of leaks and spills or other instances of inadvertent releases.
- The inspector verified that an evaluation was performed of the potential for detectible levels of licensed material from planned releases of liquids and/or airborne materials.
- The inspector verified that an evaluation has been performed and documented on the decommissioning impacts resulting from remediation activities.

b. Findings

No findings were identified.

REGION I - GINNA
DRS INPUT TO INTEGRATED REPORT 05000244/2012004

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185, Revision 1, Follow-up On the Industry's Groundwater Protection Initiative

a. Inspection Scope

An NRC assessment was performed of the Ginna Groundwater Protection Program during September 10 – 13, 2012 to determine whether Exelon fully implemented the voluntary industry groundwater protection initiative, (Nuclear Energy Institute NEI 07-07 Industry Groundwater Protection Initiative (GPI) – Final Guidance dated August 2007, ADAMS Accession Numbers ML072610036 and ML072600292). The inspector interviewed personnel, reviewed applicable documents and performed walk downs of selected areas. In addition, the inspector verified completion for these ten deviations to the acceptance criteria in NEI 07-07 that were reported in the NRC integrated inspection report 05000244/20100003:

GPI Objective 1.1 – Site Hydrology and Geology

1.1a Ginna had a new hydrology-geology study performed in August 2011.

1.1b A knowledgeable Ginna employee reviewed the hydrology-geology study to determine the dominant direction of groundwater flow and the effect site modifications had on the prevailing flow direction.

1.1d Ginna has established a frequency to conduct a periodic review of the hydrology-geology studies.

GPI Objective 1.2 – Site Risk Assessment

1.2a Ginna has identified Structures, Systems, and Components (SSCs) and work practices that could involve or could reasonably be expected to involve licensed material and for which there is a credible mechanism for licensed material to reach groundwater.

1.2b Ginna has identified leak detection methods for SSCs and work practices that could involve or could reasonably be expected to involve licensed material and for which there is a credible mechanism for licensed material to reach groundwater.

1.2c Ginna has made enhancements to leak detection systems and programs.

1.2d Ginna has made enhancements to prevent leaks or spills from reaching groundwater.

1.2f Ginna has established a frequency to conduct periodic reviews of SSCs and work practices to assure that leak detection methods and enhancements are effective in identifying and preventing leaks and spills from reaching groundwater.

GPI Objective 1.3 – On-Site Groundwater Monitoring

1.3f Ginna has established a long-term program for preventive maintenance of groundwater monitoring wells.

1.3g Ginna has established a frequency for periodic review of the groundwater monitoring program.

b. Findings and Observations

No findings were identified. The Industry Groundwater Protection Initiative has been fully implemented at Ginna.

REGION I – OYSTER CREEK
DRS INPUT TO INTEGRATED REPORT 05000219/2012004

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185, Revision 1, Follow-up On the Industry's Groundwater Protection Initiative

a. Inspection Scope

An NRC assessment was performed on the Oyster Creek Generating Station (OCGS) Groundwater Protection Program during August 6 – 10, 2012 to determine whether Exelon fully implemented the voluntary industry groundwater protection initiative, (Nuclear Energy Institute NEI 07-07 Industry Groundwater Protection Initiative – Final Guidance dated August 2007, ADAMS Accession Numbers ML072610036 and ML072600292). The inspector interviewed personnel, reviewed applicable documents and performed walkdowns of selected areas. In addition, the inspector followed-up on status of implementation for the seven deviations to the acceptance criteria in NEI 07-07 that were reported in the NRC integrated inspection report 05000219/2009005, dated January 26, 2010:

1.2.g Establish the frequency for periodic reviews of SSCs and work practices.

1.3.f Establish a long-term program for preventative maintenance of groundwater wells.

1.4.a Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases. This process is site specific and shall consider migration pathways.

1.4.b Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.

1.4.c Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof.

3.1.a An independent, knowledgeable individual(s) shall perform the initial self-assessment within one year of implementation. For existing plants, this means no later than December 31, 2008; for new plants this means within one year after initial criticality.

3.2.a An independent, knowledgeable individual(s) shall perform the initial review within one year of the initial self-assessment performed per Objective 3.1.a above.

b. Findings

No findings were identified.

The Industry Groundwater Protection Initiative has been fully implemented at OCGS. Two of the NEI 07-07 acceptance criteria were found by the licensee as not being properly implemented. Groundwater protection program improvements are being taken. Exelon placed these program improvements into their corrective action program (IR 1370473 and IR 1041403).

REGION I – PEACH BOTTOM
DRS INPUT TO INTEGRATED REPORT 05000277/050002010004 AND 05000278/2010004

4OA5 Other Activities

TI2515/185 Follow-up on the Industry's Groundwater Protection Initiative

The objective of this TI is to assess groundwater protection programs to determine whether licensees have implemented the program elements in their groundwater protection programs that were identified as incomplete in TI 2515/173.

During December 3-7, 2012, the inspector reviewed previously identified incomplete program elements within the licensee's Industry Groundwater Protection Initiative. The incomplete program elements previously identified (NRC Inspection Report 05000277/2010004: 05000278/2010004) were:

(1) GPI Objective 1.2 g - At the time of the inspection, a specific frequency had been established for periodic reviews of structures, systems, and components and work practices. However, the frequency had not yet been placed in a procedure. This matter was identified in a self-assessment and placed in the corrective action program. (AR924237)

(2) GPI Objective 1.3 f - At the time of the inspection, Exelon had established a program for the preventative maintenance of groundwater wells. However, the program had not yet been incorporated into all applicable implementing procedures. Exelon placed this issue into its corrective action program. (AR924237)

(3) GPI Objective 1.4 a.- At the time of the inspection, written procedures had not been established outlining the decision making process for remediation of leaks or spills or other instances of inadvertent releases, including consideration of migration pathways. Exelon identified this issue during an assessment of GPI implementation and placed this issue into its corrective action program. (AR924237)

(4) GPI Objective 1.4 c.- At the time of the inspection, an evaluation had not been performed and documented on the decommissioning impacts resulting from remediation activities or the absence thereof (e.g., do licensee procedures include a decision making process to evaluate prompt remediation or delayed remediation and its impact on decommissioning). Exelon identified this issue during an assessment of GPI implementation and placed this issue into its corrective action program. (AR924237)

(5) GPI Objective 1.5 - Exelon developed program procedures to establish a record keeping program to meet the requirements of 10 CFR 50.75(g) and developed an historical spill/leak list. However, Exelon identified, during a June 2010 audit, that the individual record files did not reflect some information contained in station files. Exelon initiated a review to ensure all appropriate information, consistent with criteria in 10 CFR 50.75(g) and the program procedure, were included in its

decommissioning files. Exelon placed this matter into its corrective action program. (AR1081998)

(6) GPI Objective 3.2 a. - An independent, knowledgeable individual had not performed, under the auspices of NEI, an initial review within one year of the initial self-assessment, per GPI Objective 3.1.a. This assessment was completed on February 28, 2010. Exelon placed this matter into its corrective action program. (AR1041430)

The inspector reviewed actions taken to correct the above listed incomplete items:

For incomplete item 1, the licensee inserted in section 4.3.2 of Procedure EN-AA-408-4000 the frequency for reviewing and updating the risk associated with structures, systems and components;

For incomplete item 2, the licensee inserted in section 4.1.3.3 of Procedure EN-AA-408-4000 a groundwater well preventative maintenance program;

For incomplete item 3, the licensee inserted in section 4.1.7 of Procedure EN-AA-408-4000 and Attachment 2 of Procedure EN-AA-407 the decision making process for the remediation of leaks or spills;

For incomplete item 4, the licensee inserted in section 4.1.7 of Procedure EN-AA-408-4000, and created with an Operational Technical Decision, a methodology for evaluating decommissioning impacts resulting from groundwater remediation activities;

For incomplete item 5, although this issue was at Three Mile Island, and not at Peach Bottom, Exelon amended Procedure RP-AA-228 (Rev. 1) to ensure adequate records are maintained to meet the requirements of 10 CFR 50.75(g);

And, for incomplete item 6, although the independent assessment was not performed in the time frame specified in the NEI letter, as noted in NRC Inspection Report 05000277/2010004: 05000278/2010004, this assessment was completed on February 28, 2010, and no further action is necessary.

REGION I – THREE MILE ISLAND
DRS INPUT TO INTEGRATED REPORT 05000289/2012005

4OA5 Other Activities

Temporary Instruction 2515/185, Revision 1, Follow-up On the Industry's Groundwater Protection Initiative (1 – sample)

a. Inspection Scope

An NRC assessment was performed of the Three Mile Island Groundwater Protection Program during December 10 - 14, 2012, to determine whether Exelon fully implemented the voluntary industry groundwater protection initiative, (Nuclear Energy Institute NEI 07-07 Industry Groundwater Protection Initiative (GPI) – Final Guidance dated August 2007, ADAMS Accession Numbers ML072610036 and ML072600292). The inspector interviewed personnel, reviewed applicable documents and performed walkdowns of monitoring wells. In addition, the inspector verified completion for the deviations to the acceptance criteria in NEI 07-07 that were reported in the NRC integrated inspection report 05000289/20100003:

GPI Objective 1.1 – Site Hydrology and Geology

1.1a AmerGen had a hydrogeology study performed in 2006 and re-evaluated the study in 2011.

1.1b A knowledgeable AmerGen employee reviewed the hydrogeology study to determine the dominant direction of groundwater flow and the effect of site modifications had on the prevailing groundwater flow direction.

1.1d AmerGen has established a frequency to conduct a periodic review of the hydrogeology studies.

GPI Objective 1.2 – Site Risk Assessment

1.2a AmerGen has identified Structures, Systems, and Components (SSCs) and work practices that could involve or could reasonably be expected to involve licensed material and for which there is a credible mechanism for licensed material to reach groundwater.

1.2b AmerGen has identified leak detection methods for SSCs and work practices that could involve or could reasonably be expected to involve licensed material and for which there is a credible mechanism for licensed material to reach groundwater.

1.2c AmerGen has made enhancements to leak detection systems and programs.

1.2d AmerGen has made enhancements to prevent leaks or spills from reaching groundwater.

1.2f AmerGen has established a frequency to conduct periodic reviews of SSCs and work practices to assure that leak detection methods and enhancements are effective in identifying and preventing leaks and spills from reaching groundwater.

GPI Objective 1.3 – On-Site Groundwater Monitoring

1.3f AmerGen has established a long-term program for preventive maintenance of groundwater monitoring wells.

1.3g AmerGen has established a frequency for periodic review of the groundwater monitoring program.

GPI Objective 1.4 – Remediation Process

1.4a AmerGen has established written procedures outlining the decision making process for the remediation of leaks and spills.

GPI Objective 1.5 – Recordkeeping

1.5a. AmerGen has established a recordkeeping process to meet the requirements of 10 CFR 50.75(g).

GPI Objective 3.2 – Review the program Under the Auspices of NEI

3.2b AmerGen has performed an initial review of the groundwater protection program and has established plans to review the program every five (5) years.

b. Findings and Observations

No findings were identified. The Industry Groundwater Protection Initiative has been fully implemented at Three Mile Island.

REGION II – NO PLANTS INCLUDED IN THE TI 2515/185

There were no plants in Region 2 included in the TI, since there were no Region II plants with 5 or more incomplete elements of the GPI. However, there were three Region II plants that each had one incomplete GPI element as identified in the table below.

Region II staff performed follow-up inspections of these outstanding (incomplete) elements of the GPI. The inspections found that all 3 plants had completed their outstanding (incomplete) GPI element.

Region II Plant	Number of Incomplete Program Elements	GPI Objective	Inspection Report
Farley	1 (Note: The original TI 2515/173 roll-up report incorrectly listed Farley as having 3 incomplete elements.)	2.1 Stakeholder Briefings Status: Completed	2012003
Hatch	1	1.2 Site Risk Assessment Status: Completed	2012004
Watts Bar	1	2.2 Voluntary Communications Status: Completed	DCI Report* 2013604

*The Watts Bar Unit 2 inspection results were documented in construction inspection report DCI Report 2013604 (ML13179A079).

REGION III - KEWAUNEE POWER STATION
DRS INPUT TO INTEGRATED REPORT 05000305/2012005

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185, Revision 1, Follow-up On the Industry's Groundwater Protection Initiative

a. Inspection Scope

An NRC assessment was performed on the Kewaunee Groundwater Protection Program during October 15-19, 2012, to determine whether the licensee fully implemented the voluntary industry groundwater protection initiative, Nuclear Energy Institute (NEI) 07-07 Industry Groundwater Protection Initiative – Final Guidance, dated August 2007, ADAMS Accession Numbers ML072610036 and ML072600292). The inspector interviewed personnel, reviewed applicable documents and performed walkdowns of selected areas. In addition, the inspector followed-up on the status of implementation for the five deviations to the acceptance criteria in NEI 07-07 that were reported in NRC Integrated Inspection Report 05000305/2009003:

- 1.2.f Establish long-term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.

- 1.4.b Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.

- 1.5.a Establish a record keeping program to meet the requirements of 10 CFR 50.75(g). Note that these records are used to determine an area's classification for purposes of performing surveys (see NRC Regulatory Issue Summary 2002-02 Lessons Learned Related to Recently Submitted Decommissioning Plans and License Termination Plans).

- 2.1.b Licensees should consider including additional information or updates on ground water protection in periodic discussions with State/Local officials.

- 2.1.c For licensees that are in States where multiple nuclear power plants are located and multiple owner companies, it is highly recommended that the licensees coordinate their efforts and communicate with each other. The initial briefing for the State/local officials and the contents of the voluntary communication should be consistent.

b. Findings

No findings were identified.

The inspectors determined that all the acceptance criteria were implemented. The licensee has fully implemented the Industry Groundwater Protection Initiative in accordance with NEI 07-07.

REGION 3 - PERRY NUCLEAR POWER PLANT

DRS INPUT TO INTEGRATED REPORT 05000440/2012005

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185, Revision 1, Follow-up On the Industry's Groundwater Protection Initiative

a. Inspection Scope

An NRC assessment was performed on the Groundwater Protection Program to determine whether Perry station fully implemented the voluntary industry groundwater protection initiative, (Nuclear Energy Institute NEI 07-07 Industry Groundwater Protection Initiative (GPI) – Final Guidance dated August 2007, ADAMS Accession Numbers ML072610036 and ML072600292). The inspector interviewed personnel, reviewed applicable documents and performed walkdowns of selected areas. In addition, the inspector followed-up on status of implementation for the five deviations to the acceptance criteria in NEI 07-07 that were reported in the NRC integrated inspection report 05000440/2010002, dated May 4, 2010.

Specifically the inspectors reviewed NEI – GPI Objectives

- GPI Objective 1.1e - Site Hydrology and Geology.

  Perform a site characterization of the geology and hydrology that provides an understanding of the predominant ground water gradients based upon current site conditions. Revise the Final Safety Analysis Report (FSAR) to include changes to the characterization of hydrology and/or geology, as appropriate.

- GPI Objective 1.2b – Site Risk-Assessment.

  Identify SSCs that involve or could reasonably be expected to involve licensed material for which there is a credible mechanism for licensed material to reach ground water. Identify leak detection methods for each SSC for which there is a credible mechanism for licensed material to reach ground water.

- GPI Objective 1.3f - Onsite Ground Water Monitoring

  Establish an onsite ground water monitoring program to ensure timely detection of inadvertent radiological releases to ground water including a long-term program for preventative maintenance of ground water wells.

- GPI Objective 1.4b - Remediation Process

  Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.

- GPI Objective 2.2a - Voluntary Communications

  Develop guidance for voluntary communication to satisfy the thresholds provided in the NEI Initiative or state/local agreements.

b. Findings and Observations

No findings were identified.

REGION 4 ARKANSAS NUCLEAR ONE
DRS INPUT TO INTEGRATED REPORT 05000313/2012002 AND 05000368/2012002

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185 “Follow-up on the Industry’s Ground Water Protection Initiative”

a. Inspection Scope

The ground water protection program was inspected March 19-22, 2012, to determine whether the licensee had implemented the program elements which were found to be incomplete when previously reviewed during NRC Inspection 05000313/2010004; 05000368/2010004. Inspectors interviewed cognizant licensee personnel and performed walk-downs.

The following elements had been implemented since the previous review:

- Element 1.1.a - Perform hydrogeologic and geologic studies to determine predominant ground water flow characteristics and gradients.
- Element 1.1.c - Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.
- Element 1.2.a - Identify each structure, system, and component (SSC) and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.
- Element 1.2.b - Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walkdowns or inspections, or integrity testing.
- Element 1.3.a - Using the hydrology and geology studies developed under Objective 1.1, consider placement of ground water monitoring wells down gradient from the plant but within the boundary defined by the site license.
- Element 1.3.b - Consider, as appropriate, placing sentinel wells closer to SSCs that have the highest potential for inadvertent releases that could reach ground water or SSCs where leak detection capability is limited.
- Element 2.2c - When communicating to the State/Local officials, be clear and precise in quantifying the actual release information as it applies to the appropriate regulatory criteria (i.e., put it in perspective) and provide specified information as part of the informal communication.
  Element 1.2.d - Identify potential enhancements to prevent spills or leaks from reaching ground water. Licensee personnel acknowledged this element had not yet to be completed, and it was being tracked by Condition Report CR-HQN-2010-00207, Corrective Action 12. This element had not been implemented since the previous review and is documented in the corrective action document listed with the element:

b. Findings

No findings were identified.

REGION 4 CALLAWAY
DRS INPUT TO INTEGRATED REPORT 05000483/2012004

4OA5 Other Activities
(Closed) Temporary Instruction 2515/185, Follow-up on the Industry's Ground Water Protection Initiative

a. Inspection Scope

An NRC follow-up assessment of the licensee's ground water protection program was performed the week of August 27, 2012. This review was to determine whether the licensee had implemented program elements that were identified as incomplete during the NRC's inspection of Temporary Instruction on Groundwater Protection, TI-2515/173, "Industry Groundwater Protection Initiative," on June 22, 2009. Inspectors interviewed personnel, performed walkdowns of selected areas, and reviewed the implementation of the program elements listed below.

The following elements had been implemented since the previous review:

- Element 1.1a – Perform hydrogeologic studies to determine predominant ground water flow characteristics and gradients.
- Element 1.1 b – Review existing hydrogeologic and geologic studies, historical environmental studies and permit or license-related reports.
- Element 1.1 c – Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.
- Element 1.1d – Establish the frequency for periodic reviews of site hydrogeologic studies.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walkdowns or inspections, or integrity testing.
- Element 1.2d – Identify potential enhancements to prevent spills or leaks from reaching ground water.
- Element 1.2f – Establish long-term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- Element 1.2g – Establish the frequency for periodic reviews of systems, structures, and components and work practices.

- Element 1.3.b - Consider, as appropriate, placing sentinel wells closer to structures, systems, and components that have the highest potential for inadvertent releases that could reach ground water or structures, systems, and components where leak detection capability is limited.

- Element 1.3d – Establish a formal, written program for long-term ground water monitoring. For those ground water monitoring locations that are included in the REMP, revise the site's Offsite Dose Calculation Manual.

- Element 1.3f – Establish a long-term program for preventative maintenance of ground water wells.

- Element 1.4a – Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases.

- Element 1.4b – Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.

- Element 1.4c – Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof.

b. Findings

No findings were identified. All elements were verified as complete.

REGION 4 COLUMBIA
DRS INPUT TO INTEGRATED REPORT 05000397/2012004

4OA5 OTHER ACTIVITIES
.2 (Closed) Temporary Instruction 2515/185 “Follow-up on the Industry’s Ground Water Protection Initiative”

a. Inspection Scope

The ground water protection program was inspected March 19-22, 2012, to determine whether the licensee had implemented the program elements which were found to be incomplete when previously reviewed during NRC Inspection 05000397/2009009.

Inspectors performed walk-downs and interviewed cognizant licensee personnel about the following elements:

- Element 1.2.a - Identify each SSC and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.
- Element 1.2.b - Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walk downs or inspections, or integrity testing.
- Element 1.2.d - Identify potential enhancements to prevent spills or leaks from reaching ground water. Licensee personnel acknowledged this element had not yet to be completed, and it was being tracked by Condition Report CR-HQN-2010-00207, Corrective Action 12.
- Element 1.2.e - Identify the mechanism or site process for tracking corrective actions.
- Element 1.2.f - Establish long term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- Element 1.2.g - Establish the frequency for periodic reviews of SSCs and work practices.

b. Findings

No findings were identified. All elements were implemented.

REGION 4 - COOPER
DRS INPUT TO INTEGRATED REPORT 05000298/2012003

4OA5 Other Activities
.1 (Closed) Temporary Instruction 2515/185 “Follow-up on the Industry’s Ground Water Protection Initiative”

a. Inspection Scope

An NRC assessment of the licensee’s groundwater protection program was performed the week of April 9, 2012, to determine whether the licensee implemented the program elements in this ground water protection program that were identified as incomplete in the Summary of Results from the Completion of NRC’s Temporary Instruction on Groundwater Protection, TI-2515/173, “Industry Groundwater Protection Initiative” (ML11088A047). Descriptions of the program elements can be found in NEI 07-07, “Industry Ground Water Protection Initiative – Final Guidance Document,” August 2007 (ML072610036). Inspectors interviewed personnel, performed walk-downs of selected areas, and reviewed the implementation of the following program elements:

- Element 1.1a – Perform hydrogeologic studies to determine predominant ground water flow characteristics and gradients
- Element 1.1 b – Review existing hydrogeologic and geologic studies, historical environmental studies and permit or license-related reports
- Element 1.1 c – Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water
- Element 1.1d – Establish the frequency for periodic reviews of site hydrogeologic studies
- Element 1.2a – Identify each system, structure, and component and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism to reach ground water
- Element 1.2b – Identify existing leak detection methods for each system, structure, component, and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water
- Element 1.2c – Identify potential enhancements to leak detection systems or programs
- Element 1.2d – Identify potential enhancements to prevent spills or leaks from reaching ground water
- Element 1.2e – Identify the mechanism or site process for tracking corrective Actions
- Element 1.2f – Establish long-term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure
- Element 1.2g – Establish the frequency for periodic reviews of systems, structures, and components and work practices.
- Element 1.4a – Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases

- Element 1.4b – Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials
- Element 1.4c – Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof
- Element 2.4a – The appropriate changes to the Offsite Dose Calculation Manual or to the appropriate procedures were expected to be completed in a timeframe to support the 2007 report of 2006 performance for plants that were operating or decommissioning when the groundwater protection initiative was adopted
- Element 2.4b.i – Reporting of on-site ground water sample results shall be as follows: Ground water sample results that are taken in support of the Ground water Protection Initiative but are not part of the Radiological Environmental Monitoring Program are reported in the Annual Radiological Effluent Release Report required by 10 CFR 50.36a (a)(2)

b. Findings

No findings were identified.

Fifteen out of the sixteen elements were verified as complete. One element, 1.2 f, was still open as of the time of the inspection. Its completion is being tracked in Condition Report CR-CNS-2009-03669.

REGION 4 - DIABLO CANYON
DRS INPUT TO INTEGRATED REPORT 05000275/2012004 AND 05000323/2012004

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185 “Follow-up on the Industry’s Ground Water Protection Initiative”

a. Inspection Scope

The ground water protection program was inspected March 19-22, 2012, to determine whether the licensee had implemented the program elements which were found to be incomplete when previously reviewed during NRC Inspection 05000275/2008009; 05000323/2008009. Inspectors interviewed cognizant licensee personnel and performed walk-downs.

The following elements had been implemented since the previous review:

- Element 1.2.a - Identify each SSC and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.
- Element 1.2.b - Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walk downs or inspections, or integrity testing.
- Element 1.2.d - Identify potential enhancements to prevent spills or leaks from reaching ground water.
- Element 1.2.e - Identify the mechanism or site process for tracking corrective actions.
- Element 1.2.f - Establish long term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- Element 1.2.g - Establish the frequency for periodic reviews of SSCs and work practices.
- Element 1.4.a - Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases. This process is site specific and shall consider migration pathways.
- Element 1.4.b - Evaluate the potential for detectible levels of licensed material resulting from planned releases of liquids and/or airborne materials.
- Element 1.4.c - Evaluate and document, as appropriate, decommissioning impacts resulting from remediation activities or the absence thereof.
- Element 2.2.a - Communication to the designated State/Local officials shall be made before the end of the next business day if an inadvertent leak or spill to the environment has or can potentially get into the ground water and exceeds set criteria.

- Element 2.2.b - Communication with the designated State/Local officials shall be made before the end of the next business day for a specified water sample result.
- Element 2.2.c - When communicating to the State/Local officials, be clear and precise in quantifying the actual release information as it applies to the appropriate regulatory criteria (i.e., put it in perspective) and provide specified information as part of the informal communication.
- Element 2.2.d - Voluntary communication to State and/or Local officials may also require NRC notification under 10 CFR 50.72(b)(2)(xi). Licensees should perform these notifications consistent with their existing program.
- Element 3.1.c - The self-assessment, at a minimum, shall include evaluating implementation of all of the objectives identified in this document.

b. Findings

No findings were identified. All elements have been implemented.

REGION 4 - RIVER BEND
DRS INPUT TO INTEGRATED REPORT 05000458/2012002

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185 “Follow-up on the Industry’s Ground Water Protection Initiative”

a. Inspection Scope

An NRC assessment of the licensee’s groundwater protection program was performed the week of February 27, 2012, to determine whether the licensee implemented the program elements in this ground water protection program that were identified as incomplete in the Summary of Results from the Completion of NRC’s Temporary Instruction on Groundwater Protection, TI-2515/173, “Industry Groundwater Protection Initiative” (ML11088A047). Descriptions of the program elements can be found in NEI 07-07, “Industry Ground Water Protection Initiative – Final Guidance Document,” August 2007 (ML072610036). Inspectors interviewed personnel, performed walk-downs of selected areas, and reviewed the implementation of the following program elements.

- Element 1.1a – perform hydrogeologic studies to determine predominant ground water flow characteristics and gradients
- Element 1.1d – Establish the frequency for periodic reviews of site hydrogeologic studies.
- Element 1.2a – Identify each system, structure, and component and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism to reach ground water.
- Element 1.2b – Identify existing leak detection methods for each system, structure, and component and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2c – Identify potential enhancements to leak detection systems or programs.
- Element 1.2d – Identify potential enhancements to prevent spills or leaks from reaching ground water.
- Element 1.2f – Establish long-term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- Element 1.2g – Establish the frequency for periodic reviews of systems, structures, and components and work practices.
- Element 1.3d – Establish a formal, written program for long-term ground water monitoring. For those ground water monitoring locations that are included in the REMP, revise the site’s Offsite Dose Calculation Manual.
- Element 1.3f – Establish a long-term program for preventative maintenance of ground water wells.
- • Element 1.3g – Establish the frequency for periodic review of the ground water monitoring program.

- Element 1.4a – Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases.
- Element 2.4a – The appropriate changes to the Offsite Dose Calculation Manual or to the appropriate procedures were expected to be completed in a timeframe to support the 2007 report of 2006 performance for plants that were operating or decommissioning when the groundwater protection initiative was adopted.
- Element 3.1c – The self-assessment, at a minimum, shall include evaluating the implementation of all objectives identified in NEI 07-07.

b. Findings

No findings were identified. All elements were verified as complete.

REGION 4 - WATERFORD
DRS INPUT TO INTEGRATED REPORT 05000382/2012003

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/185 “Follow-up on the Industry’s Ground Water Protection Initiative”

a. Inspection Scope

The ground water protection program was inspected June 4-7, 2012, to determine whether the licensee had implemented the program elements which were found to be incomplete when previously reviewed during NRC Inspection 05000382/2009007.

Inspectors interviewed cognizant licensee personnel and performed walk-downs.

b. Findings and Observations

The following elements had been implemented since the previous review:

- Element 1.1.a - Perform hydrogeologic and geologic studies to determine predominant ground water flow characteristics and gradients.
- Element 1.1.d – Establish the frequency for periodic reviews of site hydrogeologic studies
- Element 1.2.a - Identify each system, structure, or component and work practice that involves or could reasonably be expected to involve licensed material and for which there is a credible mechanism for the licensed material to reach ground water.
- Element 1.2.b - Identify existing leak detection methods for each SSC and work practice that involves or could involve licensed material and for which there is a credible potential for inadvertent releases to ground water.
- Element 1.2.c - Identify potential enhancements to leak detection systems or programs. These may include additional or increased frequency of rounds or walk downs or inspections, or integrity testing.
- Element 1.2.d - Identify potential enhancements to prevent spills or leaks from reaching ground water. Element 1.2.f – Establish long term programs to perform preventative maintenance or surveillance activities to minimize the potential for inadvertent releases of licensed materials due to equipment failure.
- Element 1.2.g – Establish the frequency for periodic reviews of systems, structures, or components and work practices.
- Element 3.1.c – An independent, knowledgeable individual shall perform a self-assessment which, at a minimum, shall include evaluating implementation of all of the objectives identified NEI 07-07.
- Element 1.3.d – Establish a formal, written program for long term ground water monitoring.

- Element 1.3.g – Establish the frequency for periodic review of the ground water monitoring program.

The following elements had not been implemented since the previous review and are documented in the corrective action documents listed with the elements:

- Element 1.3.f – Establish a long-term program for preventative maintenance of ground water wells (CR-WF3-2012-02751, CR-WF3-2012-2752, CR-HQN-2012-00673). This element lacked an implementing procedure or process.
- Element 1.4.a – Establish written procedures outlining the decision making process for remediation of leaks and spills or other instances of inadvertent releases (CR-WF3-2012-02757, CR-HQN-2012-00676). This element lacked an implementing procedure or process.