FOLLOW-UP ON THE INDUSTRY'S GROUND WATER PROTECTION INITIATIVE

CORNERSTONE: PUBLIC RADIATION SAFETY

APPLICABILITY: This Temporary Instruction (TI) applies to specific nuclear power plants identified 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 plants are listed in Section 3.02.

2515/185-01 OBJECTIVES

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

2515/185-02 BACKGROUND

As a result of ground water contamination incidents, 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, NRC inspectors assessed each site's implementation of the initiative using TI 2515/173 – Revision 1. Results of the inspections have been 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 summary report identified several plants that lacked full implementation of the industry's ground water protection initiative. In accordance with NUREG/BR-0075, "NRC Field Policy Manual, Revision 4," Item 14, the purpose of this TI is to assess the completion of the ground water initiative for those plants identified in the summary report as deficient with 5 or more elements of the industry's initiative. Monitoring the implementation of the industry's voluntary initiative is consistent with the Commission's

direction to the staff in Staff Requirements Memorandum – SECY-11-0019 – "Senior Management Review of Overall Regulatory Approach to Ground Water Protection," August 15, 2011 (ML112270292).

2515/185-03 INSPECTION REQUIREMENTS AND INSPECTION GUIDANCE

03.01 Review and verify that the licensee has taken corrective actions to implement the program elements in NEI 07-07, "Industry Ground Water Protection Initiative – Final Guidance Document," that were not complete when the initial inspection was performed.

03.02 Follow-up inspections will be performed for all licensees that have had any incomplete NEI-GPI program elements as identified in the NRC report, "Summary of Results from Completion of NRC's Temporary Instruction on Ground Water Protection, "TI-2515/173 Industry Ground Water Protection Initiative (ML1108A047). In order to maximize efficiency of the inspection process, the follow-up inspections will be performed either within one year using this TI for those licensees with 5 or more incomplete elements, or within two years using the baseline inspection procedure 71124.06 for those licensees with 4 or less incomplete elements.

- For licensees with four or less incomplete program elements, as part of the 2 year routine baseline inspection program, NRC staff will perform the follow-up inspections using IP-71124.06, "Radioactive Gaseous and Liquid Effluent Treatment," Section 06.a, "GPI Implementation," to inspect and verify that the licensee has taken corrective actions to complete the incomplete program elements through its corrective action program. Inspection results will be documented in section 4OA of the integrated inspection reports in accordance with IMC 0612, "Power Reactor Inspection Reports."

- For licensees with five or more incomplete program elements, NRC staff will use this TI to inspect and verify that the licensee has completed all NEI-GPI program elements. The inspection results will be documented as described below in section 2515/185-04. The plants* to be inspected under this TI are:

  - Fitzpatrick (NEI – GPI Objectives 1.2, 1.3 and 1.4)
  - Ginna (NEI – GPI Objectives 1.1, 1.2 and 1.3)
  - Oyster Creek (NEI – GPI Objectives 1.2, 1.3, 1.4, 3.1 and 3.2)
  - Three Mile Island (NEI – GPI Objectives 1.2, 1.3,1.4,1.5 and 3.2)
  - Kewaunee (NEI – GPI Objectives 1.2,1.4, 1.5 and 2.1)
  - Perry (NEI – GPI Objectives 1.1, 1.2, 1.3, 1.4 and 2.2)
  - Arkansas Nuclear (NEI – GPI Objectives 1.2, 1.3, 2.2 and 2.4)
  - Callaway (NEI – GPI Objectives 1.2, 1.3 and 1.4)

- Columbia (NEI – GPI Objective 1.2)
- Cooper (NEI – GPI Objectives 1.1, 1.2,1.4 and 2.4)
- Diablo Canyon (NEI – GPI Objectives 1.2, 1.4, 2.2 and 3.1)
- River Bend (NEI – GPI Objectives 1.1, 1.2, 1.3, 1.4 and 3.1)
- Waterford (NEI – GPI Objectives 1.1, 1.2, 1.3, 1.4 and 3.1)

* This TI is not applicable to Vermont Yankee. A review of the Vermont Yankee ground water protection program was completed prior to the issuance of this TI. The review determined that Vermont Yankee has now completed all the program elements of the industry initiative (see NRC IR No. 05000271/2011010, Accession No. ML112630475).

03.03 For each site listed in 3.02, inspect the program elements that have been identified for each plant. If an identified program element has been re-inspected and found complete during an inspection performed since the summary report was issued, then the element does not need to be re-inspected.

03.04 Review previous NRC site inspection reports for review of TI 2515/173 to identify any additional insights.

03.05 Review and verify that the licensee has completed the missing program elements. Refer to Attachment 1 for a description of the NEI guidance for each program element.

2515/185-04 REPORTING REQUIREMENTS

The results of the inspection should be reported in section 4OA of the integrated inspection reports in accordance with IMC 0612, “Power Reactor Inspection Reports.” The report should include:

a. The dates of the inspection.
b. Identification of the incomplete program elements from the previous inspection that were re-inspected and found to have been completed under this TI.
c. Identification of any remaining program elements that have not been completed (e.g., 1.1a) and licensee corrective action program number, as applicable and briefly provide supporting information on the incomplete program elements.
d. For those elements that were previously re-inspected, identify the inspection document that demonstrates that the element was reviewed and completed.

2515/185-05 COMPLETION SCHEDULE

This TI is to be initiated November 15, 2011 and completed by December 31, 2012.

2515/185-06 EXPIRATION

This TI will be completed by December 31, 2012.

2515/185-07 CONTACT

This TI was initiated by the Health Physics and Human Performance Branch (NRR/ADES/DRA/AHPB). Any technical questions regarding this TI should be addressed to Manuel Jimenez, at telephone 301-415-3915 or manuel.jimenez@nrc.gov.

2515/185-08 STATISTICAL DATA REPORTING

All direct inspection effort expended on this TI is to be charged to 2515/185 with an Inspection Program Element (IPE) code of TI. All indirect inspection effort expended on this TI for preparation and documentation should be attributed to activity codes TIP and TID respectively.

2515/185-09 RESOURCE ESTIMATE

The estimated average time to complete the TI inspection requirements is 20 hours (with a range of 10 hours to 30 hours). This TI can be performed in conjunction with the performance of the periodic baseline inspections performed for the radioactive gaseous and liquid effluent treatment and the radiological environmental monitoring program (IP 71124.06 and 71124.07). If so, inspection hours used in performing the TI can be credited for up for up to 8 hours for IP 71124.06 and 4 hours of IP 71124.07.

All hours should be charged to the TI with notes added to RPS completion for IP 71124.06 and 71124.07 describing how many hours were credited to each IP. The use of the TI to satisfy a portion of the baseline inspection requirements is documented “by reference” in accordance with the requirements of IMC 306, Section 05.03.f.3.

It is estimated that Headquarters resources will be also required to summarize and document the inspection findings in a report similar to that prepared for the initial inspection period.

2515/185-10 TRAINING

Inspectors performing this inspection must meet the basic training for inspectors specified in IMC 1245, "Inspector Qualifications." However, if technical support is needed during the inspection, contact Manuel Jimenez at telephone 301-415-3915 or manuel.jimenez@nrc.gov.

ATTACHMENT 1
Program Elements in NEI 07-07, "Industry Ground Water Protection Initiative – Final Guidance Document"

Program Element No.	Program Element Description
	Objective 1.1 – Site Hydrology and Geology
1.1.a	Perform hydrogeologic and geologic studies to determine predominant ground water flow characteristics and gradients.
1.1.b	As appropriate, review existing hydrogeologic and geologic studies, historical environmental studies, and permit or license related reports.
1.1.c	Identify potential pathways for ground water migration from on-site locations to off-site locations through ground water.
1.1.d	Establish the frequency for periodic reviews of site hydrogeologic studies. As a minimum, reviews should be performed whenever any of the following occurs: - Substantial on-site construction, - Substantial disturbance of site property, - Substantial changes in on-site or nearby off-site use of water, or - Substantial changes in on-site or nearby off-site pumping rates of ground water.
1.1.e	As appropriate, update the site's Final Safety Analysis Report with changes to the characterization of hydrology and/or geology.
	Objective 1.2 – Site Risk Assessment
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. Examples of SSCs of interest include: refueling water storage tanks, if outdoors; spent fuel pools; spent fuel pool leak detection systems; outdoor tanks; outdoor storage of contaminated equipment; buried piping; retention ponds or basins or reservoirs; lines carrying steam.
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. These may include ground water monitoring, operator rounds, engineering walk downs or inspections, leak-detection systems, or periodic integrity testing.
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.
1.2.d	Identify potential enhancements to prevent spills or leaks from reaching ground water. These may include resealing or paving surfaces or installing spill containment measures.
1.2.e	Identify the mechanism or site process for tracking corrective actions.
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.
1.2.g	Establish the frequency for periodic reviews of SSCs and work practices.
	Objective 1.3 – On-site Ground Water Monitoring
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.
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.
1.3.c	Establish sampling and analysis protocols, including analytical sensitivity requirements, for ground water and soil. Sampling for tritium in the vadose or unsaturated zone may not be practicable and may require additional evaluation. For split or duplicate samples, analytical sensitivity levels should be discussed with and agreed to by those external stakeholders responsible for the analyses to preclude future disputes.
1.3.d	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 ODCM/ODAM.
1.3.e	Periodically review existing station or contract lab(s) analytical capabilities. An important consideration is the time needed to obtain results.
1.3.f	Establish a long-term program for preventative maintenance of ground water wells.
1.3.g	Establish the frequency for periodic review of the ground water monitoring program.
	Objective 1.4 – Remediation Process
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.
	Objective 1.5 – Record Keeping
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).
	Objective 2.1 – Stakeholder Briefing
2.1.a	The licensee should conduct initial and periodic briefings of their specific GPI program with the designated State/Local officials to discuss: - The background or industry events that led to the GPI. - If there is additional information that the State/Local officials need to better understand the issue or place it in perspective for their constituents. - "How" the State/Local officials will use or distribute the information.
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 a voluntary communication should be consistent.
	Objective 2.2 – Voluntary Communication
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 any of the following criteria: i. If a spill or leak exceeding 100 gallons from a source containing licensed material, ii. If the volume of a spill or leak cannot be quantified but is likely to exceed 100 gallons from a source containing licensed material, or iii. Any leak or spill, regardless of volume or activity, deemed by the licensee to warrant voluntary communication.
2.2.b	Communication with the designated State/Local officials shall be made before the end of the next business day for a water sample result i. Of off-site ground water or surface water that exceeds any of the REMP reporting criteria for water as described in the ODCM/ODAM, or ii. Of on-site surface water, that is hydrologically connected to ground water, or ground water that is or could be used as a source of drinking water, that exceeds any of the REMP reporting criteria for water as described in the ODCM/ODAM.
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). The following information should be provided as part of the informal communication: i. A statement that the communication is being made as part of the NEI Ground Water Protection Initiative, ii. The date and time of the spill, leak, or sample result(s), iii. Whether or not the spill has been contained or the leak has been stopped, iv. If known, the location of the leak or spill or water sample(s), v. The source of the leak or spill, if known, vi. A list of the contaminant(s) and the verified concentration(s), vii. Description of the action(s) already taken and a general description of future actions, viii. An estimate of the potential or bounding annual dose to a member of the public if available at this time, and ix. An estimated time/date to provide additional information or follow-up.
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.
	Objective 2.3 – Thirty-Day Reports

2.3.a	All ground water samples taken for the Industry Initiative shall be analyzed and compared to the standards and limits contained in the station's REMP as described in the ODCM/ODAM.
2.3.b	The 30-day special report should include: i. A statement that the report is being submitted in support of the GPI, ii. A list of the contaminant(s) and the verified concentration(s), iii. Description of the action(s) taken, iv. An estimate of the potential or bounding annual dose to a member of the public, and v. Corrective action(s), if necessary, that will be taken to reduce the projected annual dose to a member of the public to less than the limits in 10 CFR 50 Appendix I.
2.3.c	All written 30-day NRC reports generated under item 2.3.a are to be concurrently forwarded to the designated State/Local officials.
	Objective 2.4 – Annual Reporting
2.4.a	The appropriate changes to the ODCM/ODAM 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 GPI was adopted. For new plants, appropriate procedures that require inclusion of significant on-site leaks/spills into ground water and all on-site ground water results shall be developed and implemented prior to initial receipt of nuclear fuel.
2.4.b.i	Reporting of on-site ground water sample results shall be as follows: Ground water sample results that are taken in support of the GPI but are not part of the REMP program (e.g. samples obtained during the investigatory phase of the Action Plan circa year 2006) are reported in the ARERR required by 10 CFR 50.36a (a)(2).
2.4.b.ii	Reporting of on-site ground water sample results shall be as follows: Once the long term monitoring sample points have been established per Objective 1.3, acceptance criterion d, the results are reported in the AREOR for those sample points that are included in the REMP as described in the ODCM/ODAM. The sample results for those long-term monitoring sample points that are not included in REMP are reported in the ARERR.
2.4.c.i	In addition to 2.4.b, voluntary communications shall be included in an annual report as follows: A description of all spills or leaks that were communicated per Objective 2.2 acceptance criterion a. shall be included in the ARERR.
2.4.c.ii	In addition to 2.4.b, voluntary communications shall be included in an annual report as follows: All <u>on-site</u> or off-site ground water sample results that exceeded the REMP reporting thresholds as described in the ODCM/ODAM that were communicated per Objective 2.2 acceptance criterion b. shall be included in either the ARERR and/or in the AREOR.
	Objective 3.1 –Self- Assessments
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.
3.1.c	The self-assessment, at a minimum, shall include evaluating implementation of all of the objectives identified in this document.
3.1.d	The self-assessment shall be documented consistent with applicable station procedures and programs.
	Objective 3.2 – NEI Program Assessments
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.

ATTACHMENT 2

Revision History for TI 2515/185
FOLLOW-UP ON THE INDUSTRY'S GROUND WATER PROTECTION INITIATIVE

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
N/A	11/23/11 CN 11-038 ML1130 AA479	This TI is being issued to collect follow-up information on deviations in the plants' adherence to the Industry Ground Water Protection Initiative.	N/A	N/A	ML11277A241