NEI

NUCLEAR ENERGY INSTITUTE

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SENIOR VICE PRESIDENT AND
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September 27, 2010

Mr. William Borchardt
Executive Director of Operations
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Industry Initiative on Underground Piping and Tanks Integrity.

Project Number: 689

Dear Mr. Borchardt:

Last November we informed you that the industry had approved a Buried Piping Integrity Initiative. The goal of that Initiative was to achieve reasonable assurance of structural and leakage integrity of buried piping (piping that is in direct contact with the soil). The first milestone under that Initiative, procedures and oversight, was due to be completed by June 30, 2010. All utilities have reported that this milestone was completed on schedule.

Since the time the Buried Piping Integrity Initiative was approved, operating experience (OE) has shown that underground piping that is not in direct contact with the soil can also degrade. In response to this OE, and in the interest of completeness, the industry Chief Nuclear Officers recently approved a revision to the Buried Piping Integrity Initiative that includes underground piping that is not in direct contact with the soil and underground tanks if these components are safety related or contain licensed radioactive material. A copy of this Initiative, entitled the "Underground Piping and Tanks Integrity Initiative", is attached. The Underground Piping and Tanks Integrity Initiative continues and enhances industry's commitment to a proactive approach for managing these components with a special emphasis on components that contain radioactive materials.

We briefed your staff on this new industry initiative on September 21, 2010, and would be pleased to discuss it with you at your convenience. If you have any questions, please feel free to contact me at 202-739-8081; arp@nei.org or Alex Marion at 202-739-8080; am@nei.org.

Sincerely,

Anthony R. Pietrangelo

Attachment

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Underground Piping and Tanks Integrity Initiative

Background

In the past several years, a number of self revealing leaks in buried piping systems have occurred that have impacted public confidence, regulatory margin, and in some cases plant operation. In response to these events, NSIAC approved the Buried Piping Integrity Initiative in November 2009. The Initiative applied to all piping that is below grade and in direct contact with the soil. It defined a series of milestones for various activities that will result in performing condition assessments of buried pipe and establishing an asset management plan for these components. The Initiative was intended to enhance public confidence in the operation and maintenance of our plants.

Shortly after the Initiative was approved, Entergy identified a pipe located within an underground vault as the source of a tritium leak at Vermont Yankee. This event received a lot of public attention in the Northeast and attracted significant political interest. This experience showed us that, if our Initiative was intended to enhance public confidence, limiting the scope of the Initiative to piping that is in direct contact with the soil was not adequate.

In response to this concern, the NEI Buried Piping Integrity Task Force developed a revision to the Initiative that extends its scope to additional underground components. The added scope includes underground piping and tanks that are outside of a building and below grade (whether or not they are in direct contact with the soil) if they:

- are safety related

  - or -

- contain licensed radioactive material or are known to be contaminated with licensed radioactive material.

The task force also defined a series of milestones similar to those established under the original Initiative but with extended completion dates. The new milestones are only applicable to the new scope.

This new Initiative is called the Underground Piping and Tanks Integrity Initiative. The NEI Buried Piping Integrity Working Group endorsed the new Initiative on August 10, 2010. The NSIAC informally indicated a positive response to the Initiative at its meeting on August 25, 2010. This document is being sent to you as an enclosure to the ballot that will formally document NSIAC approval of the Underground Piping and Tanks Integrity Initiative.

The combination of the Buried Piping Integrity Initiative and the Underground Piping and Tanks Integrity Initiative should achieve our goal of providing reasonable assurance of structural and leakage integrity of in-scope underground piping and tanks, while placing special emphasis on components that contain licensed radioactive materials.

Introduction

Over the past several years there have been instances of inadvertent releases of licensed radioactive material from nuclear power plants. While none of these instances have threatened public health and safety or compromised environmental protection, public confidence in the safe operation of nuclear power plants has been affected.

To address this issue, the industry adopted the Ground Water Protection Initiative in May, 2006. The objectives of this initiative are to "improve the management of situations involving inadvertent radiological releases that get into the groundwater, and to enhance the trust and confidence on the part of local communities, States, the NRC and the public in the nuclear industry's commitment to a high standard of public radiation safety and protection of the environment".

Industry experiences initially indicated buried piping in contact with soil presented the greatest challenge for environmental and public concern. Accordingly, the Buried Piping Integrity Initiative was approved by the industry's Chief Nuclear Officers in November, 2009 to specifically address the structural and leak integrity of buried piping in contact with soil. More recently, industry experience has demonstrated the need to expand the scope of the Buried Piping Integrity Initiative to underground piping and tanks that are not in direct contact with the soil. The resulting Underground Piping and Tanks Integrity Initiative was developed to incorporate and expand upon the Buried Piping Integrity Initiative. The scope and actions expected under the Underground Piping and Tanks Integrity Initiative are documented below.

NSIAC (Nuclear Strategic Issues Advisory Committee) will provide oversight of industry implementation of the Underground Piping and Tanks Integrity Initiative. Periodic reports will be presented to NSIAC which include:

- Progress on implementation of the elements of this initiative and any exceptions.
- Industry experience and lessons learned.
- Progress of technology development.

Initiative Goal

The goal of the Underground Piping and Tanks Integrity Initiative is to provide reasonable assurance of structural and leakage integrity of in-scope underground and buried piping and tanks. The Initiative places special emphasis on components that contain licensed radioactive materials.

Building upon the existing Ground Water Protection and Buried Piping Integrity Initiatives, the Underground Piping and Tanks Integrity Initiative will:

- Drive proactive assessment and management of the condition of piping and tanks that fall within the Initiative scope,
- Ensure sharing of industry experience,
- Drive technology development to improve upon available techniques for inspecting and analyzing underground piping and tanks.

Underground Piping and Tanks Integrity Initiative Scope

Components that fall within the scope of the Underground Piping and Tanks Integrity Initiative include:

A. Those within the scope of the original Buried Piping Integrity Initiative:

- All piping that is below grade and
  - Contains any fluid and
  - Is in direct contact with the soil

B. And the following additional components:

- Underground piping and tanks that are outside of a building and below grade (whether or not they are in direct contact with the soil) if they
  - Are safety related

    - Or -
  - Contain licensed radioactive material or are known to be contaminated with licensed radioactive material.

Underground Piping and Tanks Integrity Initiative Actions

In order to meet the Initiative goals, every utility shall implement measures or program(s) to satisfy the following elements and associated key attributes.

A. Original Buried Piping Integrity Initiative Elements

The components governed by the original Buried Piping Integrity Initiative are described in part A of the scope section above. The following elements, attributes, and milestones were established by the original Buried Piping Integrity Initiative when it was approved in November 2009. The EPRI

document "*Recommendations for an Effective Program to Control the Degradation of Buried Pipe*" provides additional details on these elements and attributes.

Some changes are included in the description below to clarify meaning, but their intent is unchanged and they remain in effect under the Underground Piping and Tanks Integrity Initiative.

1. **Procedures and Oversight** – By June, 30, 2010:
    - Ensure clear roles and responsibilities including senior level accountability for the Buried Piping Integrity Program.
    - Develop a Buried Piping Integrity Program document and implementing procedures.

2. **Risk Ranking** – Risk Rank buried piping segments by December 31, 2010. Risk Ranking shall incorporate the following attributes:
    - Pipe function
    - Pipe locations and layout
    - Pipe materials and design
    - Health of cathodic protection systems, if applicable
    - Based on the above data and other information, determine:
        - The likelihood of failure of each piping segment
        - The consequences of failure of each piping segment
    - A means to update the risk ranking as necessary
    - A database to track key program data, inspection results, and trends

3. **Inspection Plan** – By June 30, 2011 develop an inspection plan to provide reasonable assurance of integrity of buried piping. This plan shall include the following key attributes:
    - Identification of piping segments to be inspected
    - Potential inspection techniques
    - Inspection schedule for buried piping segments based on risk ranking
    - Assessment of cathodic protection, if applicable

4. **Plan Implementation** – Implementation of the Inspection Plan shall start no later than June 30, 2012. The condition assessment of buried piping containing licensed radioactive material shall be completed by June 30, 2013.

5. **Asset Management Plan** – Inspection results shall be used as input to the development of an asset management plan for buried piping. This plan shall receive a high level of review and approval and will be in place by December 31, 2013.

B. Underground Piping and Tanks Integrity Initiative Elements

The additional components falling within the scope of the Underground Piping and Tanks Integrity Initiative are described in part B of the scope section above. The elements, attributes, and milestones described below are established for the additional scope of the Underground Piping and Tanks Integrity Initiative.

1. **Procedures and Oversight** – By December 31, 2011
   - Identify the plant programs or measures that manage the material condition of components within the scope of the Underground Piping and Tanks Integrity Initiative.
   - Establish the necessary controls and implementing process to coordinate the applicable programs and measures and ensure they meet the intent of the Initiative.
   - Establish clear roles and responsibilities including senior level accountability for implementation of the Underground Piping and Tanks Integrity Initiative.

2. **Prioritization** – Prioritize underground piping and tanks by June 30, 2012. Prioritization shall consider the following attributes:
   - Function
   - Locations and layout
   - Materials and design
   - Process fluid
   - Health of cathodic protection systems, if applicable
   - Based on the above data and other information, determine:
     - The likelihood of failure of each component
     - The consequences of failure of each component
   - A means to update the prioritization scheme as necessary
   - Process(es) to allow retrieval of key program data

3. **Condition Assessment Plan(s)** – By December 31, 2012 develop or identify existing condition assessment plans that will provide reasonable assurance of integrity of components within the additional scope of the Underground Piping and Tanks Integrity Initiative. These plans shall include the following key attributes:
   - Identification of underground piping and tanks to be assessed
   - Potential assessment techniques
   - Assessment schedules that take into account the relative priority of components. This schedule should be coordinated with the schedule developed for the original

Buried Piping Integrity Initiative to ensure that the components with the highest overall priority are addressed first.

- Assessment of cathodic protection, if applicable

4. **Plan Implementation** – Implementation of the Condition Assessment Plan for underground piping and tanks shall start no later than June 30, 2013. The condition assessment of underground piping and tanks containing licensed radioactive material shall be completed by June 30, 2014.

5. **Asset Management Plan** – Inspection results shall be used as input to the development of asset management plans for components within the scope of the Underground Piping and Tanks Integrity Initiative. These plans shall receive a high level of review and approval and will be in place by December 31, 2014.