

# Proposed Buried Piping Integrity Initiative

November 18, 2009

## Introduction

It has become evident that additional industry action is warranted regarding the performance of buried piping systems within our current fleet. Buried pipe is used in several applications at our plants:

- safety related pipe,
  - governed by Tech Specs and ASME Code,
- non-safety related pipe conveying radiologically contaminated fluid,
  - governed by local, State and EPA regulations and subject to our Ground Water Initiative
- other pipes conveying non-safety related water systems, fuel oils, gasses or other media
  - may be governed by local, State and EPA regulations.

The material condition of the majority of buried piping is unknown, and one of the means of protecting buried piping, cathodic protection, may not have been adequately maintained across the industry. In the past several years, a number of self revealing leaks have occurred that are impacting public confidence, regulatory margin, and in some cases plant operation. Potential impacts that could occur if performance is not improved could be:

- safety and operational challenges
- negative environmental impacts,
- additional regulatory requirements,
- EPA violations with adverse industry publicity,
- license renewal delays and
- heightened opposition to new plant construction.

To assure consistent and measured progress in this area it is recommended that an NSIAC Initiative be approved to commit to specific buried pipe program elements. These required elements are specified in the text of the Initiative below. The EPRI Document *“Recommendations for an Effective Program to Control the Degradation of Buried Pipe”* provides additional details on the attributes of the Initiative elements. These required elements should be incorporated into each site’s buried piping program. The scope of the Buried Piping Integrity Initiative includes all buried piping on the site.

Implementation of an assessment program for buried piping will minimize unexpected failures. While there is no current technology that can be used to inspect and prevent small leaks (pin holes), existing technologies can be used to sample the integrity of the pipe and proactively schedule mitigative actions.

In addition, INPO should be requested to incorporate within their evaluations a review of plant Buried Piping Programs, including piping that may not be safety related but is important to plant safety or contains potentially radiologically contaminated fluids.

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## Text of the Initiative

### Initiative Goal

The goal of the Buried Piping Integrity Initiative is to provide reasonable assurance of structural and leakage integrity of all buried piping with special emphasis on piping that contains radioactive materials.

Building upon the existing Groundwater Protection Initiative the Buried Piping Initiative will:

- Drive proactive assessment and management of the condition of buried piping systems.
- Ensure sharing of industry experience
- Drive technology development to improve upon available techniques for inspecting and analyzing underground piping.

### Initiative Actions

In order to meet these goals, every utility shall implement a Buried Piping Integrity Program that incorporates the following elements and associated key attributes. The EPRI document “*Recommendations for an Effective Program to Control the Degradation of Buried Pipe*” (1016456) provides additional details on the Initiative elements and attributes.

#### 1. Procedures and Oversight – By June, 30, 2010:

- Ensure clear roles and responsibilities including senior level accountability for the Buried Pipe Integrity Program.
- Develop a Buried Pipe Integrity Program document and implementing procedures.
- NSIAC will provide oversight of industry implementation, reports will include:
  - Progress on implementation of the commitments within this initiative and any exceptions
  - Industry experience and learning
  - Progress with technology development

#### 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:
  - The likelihood of each piping segment to not meet the applicable code criteria
  - 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

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- 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 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.