

Buried and Underground Piping

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Summary

- NRC's objectives related to buried piping
 - Maintenance of intended nuclear operations safety function
 - Releases remain below regulatory limits
- Current regulations and industry activities are adequate with regard to these objectives
- NRC is monitoring and responding to events related to buried piping
- NRC is working to understand and assess licensee implementation of the Buried Piping Integrity Initiative and the Underground Piping and Tanks Integrity Initiative



Buried Piping Action Plan

- **Data collection**
 - Historical rate of incidence
 - Affected systems
 - System classifications
 - Tritium releases
- **Program assessment**
 - Understand Buried Piping Integrity Initiative and Underground Piping and Tanks Integrity Initiative
 - Temporary Instruction for NRC inspection of Initiative activities
 - Initiative details (scope, risk ranking, inspection techniques)
- **Codes and standards**
- **Regulatory activities**
 - Website
 - License renewal
 - Commitments
 - Recommendations for rulemaking

Ongoing Action Plan Items

- Gather leak and tritium release data
- Meet with industry
- Evaluate guided wave
- Maintain NRC Public Website Buried Piping Page
 - <http://www.nrc.gov/reactors/operating/ops-experience/buried-piping-activities.html>
- Participate in ASME and NACE activities
- Evaluate the need for regulatory changes



Open Action Plan Items

- 1-7 High pressure piping is given appropriate inspection priority and ASME Section XI IWA-5244 tests are being performed as required
- 1-9 Establish pre-2010 rate of occurrence of degradation events
- 2-9 Evaluate risk ranking
- 2-10 Stay abreast of ongoing industry research
- 4-8 Evaluate need to change ROP
- 4-10 Evaluate the need for regulatory changes



Codes and Standards

- ASME Code
 - Section XI established a committee to address leaks from buried piping
 - Consideration of enhanced inspection requirements
 - Consideration of extension of scope to nonsafety-related piping that contains tritium
 - Task Group on Buried Components Inspection and Testing
- NACE International (formerly National Association of Corrosion Engineers)
 - Task groups to develop standards for nuclear buried piping

NRC Actions

- License renewal
 - Revised buried piping aging management program
 - GALL XI.M41, “Buried and Underground Piping and Tanks
 - Internal surfaces
- Inspection
 - Temporary Instruction for inspection of buried piping activities
 - ML11119A167
 - Implementation by December, 2011
 - Temporary Inspection instructions exists through 2014
 - Seeking to understand commitment to minimizing leaks
 - Considering revision to reflect Revision 2 of NEI 09-14

Staff Requirements SECY-11-0019



- Approved SECY 11-00179
 - If the staff finds that the voluntary initiatives are not conducted in a *committed and enduring fashion*, the staff should present information to this effect to the Commission which can and, if necessary, will revisit this matter.



Staff Requirements SECY-11-0076



- SECY-11-0076 - Improving the Public Radiation Safety Cornerstone of the Reactor Oversight Process
- “The Commission has approved the staff’s commitment to work with internal and external stakeholders on potential enhancements to the performance indicator program, but has not approved changes to the radiological effluent performance indicator or other modifications to the reactor oversight process (ROP) related to groundwater contamination control...”



Temporary Instruction

- Objectives
 - Determine whether industry is implementing initiatives in a “committed and enduring fashion....”
 - Enable staff to assess whether initiative as implemented provides reasonable assurance of structural and leaktight integrity
 - Phase 1
 - Compare plant program to initiative
 - Assess deadline compliance
 - Phase 2
 - Assess deadline compliance
 - Assesses “committed and enduring fashion”
 - Revision to incorporate Rev 2 of the guidelines and address plants that shut down



- **NRC’s objectives related to buried piping**
 - Maintenance of intended function
 - Releases remain below regulatory limits
- **Current regulations and industry activities are compatible with these objectives**
- **NRC is monitoring current events related to buried piping**
- **NRC is performing action plan activities, including monitoring industry initiatives**

Pre Initiative Leak Rate

- Buried Piping Plan
 - Requires comparison leak rate pre- and post-initiative
 - Acknowledges potential increase as initiative is implemented
- Leak rate defined as
 - Actual leak
 - Safety Related or
 - Contains radioactive material or
 - Contains other hazardous material
- Initiative started in 2010
 - Pre-initiative leak rate 2009 and earlier



Pre Initiative Leak Rate

- EPIX data base
 - Source of leak rate data
 - Changed reporting requirements beginning 2009
 - 2008 and prior data not comparable to 2009 and later
 - Historical events still being added to data base
- Current pre-initiative leak rate is 20 events



Risk Ranking Evaluation

- Buried piping action plan
 - Requires review of initiative risk ranking process
- Review based on feedback from temporary instruction
 - All phase 1 results indicate plants have risk ranking
 - Some phase 2 results indicate risk ranking produces reasonable results
- NRC finds risk ranking process employed is reasonable

