

Evaluation of Buried Piping at Nuclear Reactor Facilities

Bob Hardies
Nuclear Regulatory Commission
Senior Level Advisor
Office of Nuclear Reactor Regulation
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Summary



- NRC's objectives related to buried piping
 - Maintenance of intended 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

Background



- The Groundwater Protection Initiative led to enhanced groundwater monitoring and communication practices
- Several leaks from buried piping in 2008 and 2009 resulted in groundwater contamination
- September 3, 2009, Chairman Jaczko tasked the staff with providing a summary of activities related to buried pipe
- Industry establishes the Buried Piping Integrity Initiative, November, 2009
- December 3, 2009, SECY 09-0174 (ML093160004)
 - Look at regulations, codes and standards and industry activities

Background



- Leaks at Vermont Yankee in 2010 from underground piping (in a concrete vault) generated significant stakeholder interest
 - Definitions:
 - Buried – In intimate contact with soil or concrete; it can be cathodically protected
 - Underground – Below grade in a vault or chase. In contact with air.
- May 18, 2010, Buried Piping Action Plan (ML101480739)
- September 14, 2010, Buried Piping Action Plan update (ML102590171)
- Meetings with industry 10/22/2009, 2/24/2010, 9/21/2010, 3/30/2011
- Letter to industry August 18, 2010 (ML102300270)

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Buried Piping Action Plan



- Data collection
 - Historical rate of incidence
 - Affected systems
 - System classifications
- Program assessment
 - Buried Piping Integrity Initiative and Underground Piping and Tanks Integrity Initiative
 - Temporary Instruction for NRC inspection of Initiative activities
- Codes and standards
- Regulatory activities
 - Website
 - License renewal
 - Identify additional needs

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Codes and Standards



- ASME Code
 - Met with ASME, Section XI management August 6, 2010
 - In November 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
- NACE International (formerly National Association of Corrosion Engineers)
 - Task group to develop standards for nuclear buried piping
 - First task group meeting September, 2010

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NRC Actions



- Inspection
 - Temporary Instruction for inspection of buried piping activities
 - Implementation by June 2011
 - Temporary Inspection instructions may exist through 2015
 - Seeking to understand details:
 - Risk ranking processes
 - Inspection techniques and processes
- License renewal
 - Revised buried piping aging management program

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Industry Activities



- Buried Piping Integrity Initiative, November 2009
 - Initiative requirements:
 - Write program and procedures
 - Ranking
 - Inspection Plan
 - Inspection
 - Asset Management plan
- Underground Piping and Tanks Integrity Initiative, September 2010
 - Similar requirements with added scope

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Performance



- Seeking to establish a pre-2010 incidence rate for leaks as a performance baseline
- Monitoring operating experience
- Evaluating need for commitments for initiative

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Conclusions



- 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
