

Buried Piping



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Protecting People and the Environment

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Purpose

- Describe NRC activities related to degradation of buried piping



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Issue

- Groundwater incidents in the 2005 timeframe led to improved groundwater monitoring by the industry
- Several leaks from buried piping in 2009 and 2010 resulted in groundwater contamination

NRC Response

- September 3, 2009, Chairman Jaczko tasked the staff with providing a summary of activities related to buried pipe
- December 3, 2009 the staff issued SECY 09-0174 in response to the Chairman's tasking memo



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Tasking Memo Conclusions

- SECY 09-0174 examined
 - Current regulations
 - ASME Code requirements
 - Industry activities
- Considered safety-related and nonsafety-related piping
- Concluded these areas to be acceptable for
 - Operating plants
 - Plants undergoing license renewal
 - New plants

- All reactors
 - 10 CFR Part 50 Appendix A, “General Design Criteria”
 - 10 CFR 50.55a, “Codes and Standards,”
 - 10 CFR 20.1301, “Dose Limits...”
 - 10 CFR 50, Appendix I, “Numerical Guides and Design Objectives...”
- License renewal
 - 10 CFR part 54.21(a), “Aging Management”
- New reactors
 - 10 CFR 20.1406, “Minimization of Contamination”
- Current regulations are adequate to ensure safety function and to maintain releases below limits

Codes and Standards

- ASME Code
 - Scope is safety-related piping and structural integrity, not leak tightness
 - Section III
 - Section XI
- Current ASME Code requirements are adequate to ensure structural integrity is maintained for buried, safety-related piping
- NACE International (formerly National Association of Corrosion Engineers)

- ROP
 - No specific guidance that directs NRC inspectors to review buried piping activities
 - Smart samples when buried piping is available to inspect.
 - NRC inspects performance related to industry initiatives
- Priority of NRC inspection of buried piping activities is adequate based on safety significance of observed leaks

- NEI 07-07, Groundwater Protection Initiative
 - Focused on detecting leaks
- INPO
 - Reviews since 2007
- EPRI
 - Workshops and training
 - “Recommendations for Effective Program to Control the Degradation of Buried Pipe,”
December 2008

Basis for Conclusions

- Existing Regulations establish criteria for NRC actions
 - Intended functions of systems must be maintained
 - Intended function of is to supply cooling water to allow for and maintain safe shutdown
 - Exposure of plant personnel and the public may not exceed regulatory limits

Basis for Conclusion

- Leaks have not adversely impacted intended function
- Leaks which would affect intended function are inconsistent with observed corrosion mechanisms
- Leaks have not resulted in any radiation exposure to the public

Current Activities

- Review industry Buried Piping Initiative
 - Public Meeting February 24
- Update GALL Report
- Monitor current buried piping leaks / groundwater contamination
- Conduct operating experience review

Ongoing Activities

- Participate in ASME Code
- Participate in NACE standards activities
- ROP
 - Smart samples
 - Temporary Inspection of implementation of the initiative
 - Potential audits
- Continue operating experience review
- Preparing Information Notice

Conclusions

- NRCs 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 updating the GALL Report for license renewal