

U.S. NRC and Industry Public Meeting

Buried/Underground Piping

American Society of Mechanical Engineers

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ASME SCXI Buried Component Activities

Committee Groups Relevant to Buried Components

- TG Buried Component Inspection & Testing
- TG Evaluation Procedures for Degraded Buried Piping
- WG Pressure Testing
- Special WG Nuclear Plant Aging Management
- SG Water Cooled Systems
- SG Nondestructive Examination
- SG Industry Experience for New Plants

ASME SCXI Buried Component Activities

Current Section XI Rules

- IWA-5244, Buried Component Leakage Tests
 - Visual of Annulus
 - Pressure Decay or Change in Flow
 - Unimpaired Flow
- Code Case N-776, Ground Surface Examination Program (Approved April 2010)
- Code Case N-806 (Approved June 2012)
 - Evaluation of Metal Loss for Cl. 2&3 Buried Metallic Pipe with Back-Fill

ASME SCXI Buried Component Activities

TG BCIT – Recent Timeline

- November 2010
 - TG Approved by Executive Committee
 - Charter Established
- 2011 (January 31, May 9, August 8, November 7)
 - Membership & Interest Groups
 - Scope, Initial Action Items, Data Collection
 - First Code Paragraph Considerations
- 2012 (February 6, May 14, August 13, November 5)
 - Identification of Code Areas for Inclusion/Update
 - Code Case Alternatives to IWA-5244
 - Code Additions for BP Risk Ranking and Inspections
- February 11, 2013
 - Next Meeting in Los Angeles

ASME SCXI Buried Component Activities

TG BCIT – Goals

- Consider All Stakeholders
- Evaluate the Safety and Functional Impact of Recent Operating Experience
- Compile Industry Group Activities and Guides
- Assess and Support Inspection Technique Development
- Codify Best Practices
- Publish a Practical, Manageable set of Technically Sound Rules for Regulatory Endorsement

ASME SCXI Buried Component Activities

TG BCIT – Scope

- Buried and Underground Piping & Components
- Commission Activities
- Industry Groups (NEI, EPRI, INPO, NACE, BPIG)
- TG Charter
 - Programmatic
 - Inspection & Testing
 - Mitigation, Repair, Replacement
 - Design and New Plants

ASME SCXI Buried Component Activities

TG BCIT – Scope, Phased Approach

- Component Classifications

Safety Related

- ¹ • Classed 1, 2, and 3
- Non-Classed

Non-Safety Related

- Many Considerations
 - Function
 - Impact
 - Jurisdiction
 - Owner

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TG BCIT – Action Item Status

AI #1	Liaisons – NACE and Section V	Initial Complete
AI #2	Develop Historical White Paper	Closed
AI #3	Define Scope	Initial Complete
AI #4	Compile Industry Papers	Initial Complete
AI #5	List of BP Inspection Methods	Open
AI #6	EPIX Operating Experience	Initial Complete
AI #7	BPI Initiative Timeline	Closed
AI #8	Codify New IWA-5244 Rules	Open
AI #9	Risk Ranking Methodology	Open
AI #10	Non Mandatory Appendix IWA-5244 Guide	Open
AI #11	Fukushima Lessons Learned	Open
AI #12	IWA-9000 Buried Component Definition(s)	Open
AI #13	Examination Category Tables	Open

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TG BCIT – AI #5, List of BP Inspection Methods

- First Compilation, No Screening Criteria

Direct

- Visual Inspection
- Liquid Penetrant Testing
- Magnetic Particle Testing
- Guided Wave
- Lamb Wave
- Remote Field Testing
- Magnetic Flux Leakage
- UT & Inspection Vehicles
- Radiography
- Electromagnetic Technology

Indirect

- Pipe-to-Soil Potential
- Direct Current Voltage Gradient
- Pearson Survey / Alternate Current Voltage Gradient
- Close Internal Potential Survey
- Area Potential Earth Current
- Soil Analysis

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TG BCIT – AI #8, Codify New Rules

- Update Current IWA-5244, Buried Components
- New Code Cases (2 out for Ballot)
- New Non Mandatory Appendix (Guidance)
- Consider IWA-2200 Examination Methods

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TG BCIT – AI #9, Risk Ranking Methodology

- Consideration of Current Industry Methods
 - Approx. 3 in Practice
- Build off of other SCXI Risk Informed Activities
- Initial Draft in November Identified Challenges
 - Scope (Traditional SCXI Exemptions, e.g. small bore)
 - Consequence vs. Failure Potential Matrix
 - Safety Related High, Binning Remaining (Nuclear Safety vs. Industrial, Environmental, and Plant Ops)
 - Will Phased Approach Support Ranking

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TG BCIT – AI #13, Examination Category Tables

- Consider New Tables
 - IWC-2500-1 Category C-__ & IWD-2500-1 Category D-__
- New Shell Tables
 - Parts Examined
 - Exam Requirements
 - Exam Method
 - Acceptance Criteria
 - Extent of Exam
 - Frequency of Exam
- Inspect for Degradation, Not Leakage
- Appendix for Rules such as Risk Ranking

ASME SCXI Buried Component Activities

Summary

- Strengthening ASME Standards relative to Buried Component Inspection
- Consideration of Ongoing Industry Activities
- Phased Approach to System Scope
- Enabling Clear Requirements and Consistent Fleet Implementation