

CSNI Survey on Buried Tanks and Piping

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Introduction

- A buried tanks and piping (BTP) survey was conducted through the Nuclear Energy Agency (NEA) Committee on the Safety of Nuclear Installations (CSNI)
- CSNI is a body of primarily international regulatory bodies and their technical support organizations (TSOs)
- Survey consisted of 20 questions in the following categories
 - Technical and regulatory concerns
 - Operating experience
 - Relevant codes and standards
 - Regulatory framework and actions
 - Industry responsibilities and initiatives
- Five countries and the Joint Research Center (JRC) responded to the survey:
 - Canada, Czech Republic, Slovakia, Switzerland, USA

Summary of Responses to Selected Questions

- No other country, other than US, reported any tritium leaks within the last 5 years in BTP
- No country has a simple regulatory mechanism to track leakage events in BTP
- All reporting countries only have regulatory authority for safety-related BTP
- Only a limited number of safety-related BTP internationally
- For non-safety related BTP,
 - Most countries have no additional regulations
 - A few countries require aging management programs (AMPs) related to long-term operation (LTO)

Research related to managing or detecting leakage in BTP

- Canada
 - None currently
- Czech Republic
 - Conducted several studies over last 10 years on degradation in BTP
 - None currently
- Slovakia
 - Evaluating condition of essential service water (ESW) piping
 - Planning study on replacement and condition monitoring (including detection of potential leakage) of buried ESW and SW piping
- Switzerland
 - None currently
- US
 - Research on detection and consequences of BTP degradation (NUREG/CR-6876)
 - Summary of activities used to manage contamination issues (NUREG/CR-7029)

Industry initiatives and related research

- Canada
 - CANDU Owners Group (COG) issued COG-09-4055 “NDE Methods for Buried Pipe: Review and Best-Practice Recommendations”.
 - Methods reviewed by EPRI are largely applicable to CANDU buried pipe
- Czech Republic
 - Industry is summarizing available codes and standards, including US ones, to create a proposal for a BP program
- Slovakia
 - Evaluating condition of all the relevant piping (started in 2011)
 - Summarizing operational events, failures, repair and replacement, evaluation of condition of piping and components with the determination of their reliability
- US
 - EPRI established Buried Piping Integrity Group for overseeing initiatives
 - Ongoing research includes
 - Development of risk-ranking software
 - Development and evaluation of remote inspection techniques
 - Design, maintenance, and evaluation of CP
 - Development of NDE

Technical issues and activities related to BTP

- Canada
 - Issue: develop a more structured monitoring and oversight process
 - Activity: developing standard for inspecting BOP pressure boundary components
- Czech Republic
 - Issue: leakage is not a generic problem and is limited to some systems only
 - Activity: addressing specific leakage issues at the Temelin and Dukovany plants
- Slovakia
 - Issue: current methods for condition monitoring are not sufficient
 - Activities
 - Evaluating condition of relevant BTP
 - Preparing to test new methods of BTP condition monitoring
- Switzerland
 - Issue: MIC and pitting in some buried auxiliary cooling water systems
 - Activity: Initiated special maintenance measures for non-safety relevant BTP
- US
 - Issue: No issues with respect to safe operation
 - Activities
 - Reducing cost and improving inspection reliability
 - EPRI has produced several reports related to BTP and NDE of BTP