

Overview of BWRVIP-25, Rev. 1

Core Plate Inspection and Evaluation Guideline

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BWRVIP-NRC Meeting
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Background

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 - Bolts not fully accessible via VT without considerable removal of hardware/fuel
 - VT is of limited value in that the threaded portion and/or shank region cannot be fully interrogated to determine whether degradation might exist. As a result, VT is considered impractical
 - UT is not capable of determining degradation from top of bolt. Top nut has welded keeper which limits sound entering bolt (refer to the following 2 slides)
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 - BWRVIP-25, Rev. 1 developed to provide a generic analysis method that can be applied in lieu of periodic inspections of core plate bolts

Pictures of Core Plate and Bolting

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Pictures of Core Plate and Bolting

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Evaluation Summary

- The report documents an evaluation to justify elimination of periodic core plate bolt inspections for BWRs without core plate wedges
- Plants that meet the constraints in this evaluation may use it to show that inspections of their core plate bolts are no longer required because of
 - Intergranular stress corrosion cracking (IGSCC) resistance of the bolts (based on Type 304 SS material and fabrication method)
 - Excellent field experience
 - A margin assessment on number of bolts required to meet allowable limits

Project Scope

- Provide a technical basis for the anticipated [[

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- Provide a technical basis to justify bolt resistance to IGSCC based on review of BWR plant material and fabrication data and field experience
- Provide a margin assessment to show how many bolts are required for various load levels to ensure that core plate horizontal displacement is maintained below an acceptable level and ASME allowable stress limits are met

Integrated Relaxation due to Fluence

- Amount of relaxation is directly related to the amount of irradiation (fluence) along the length of the bolt

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IGSCC Resistance of Bolts and Aligner Pins

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- Good field experience

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Field Experience

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Finite Element Analysis Methodology Overview

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FE Model: Components

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Structural Acceptance Criteria

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BWRs Covered in Analysis

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Categories

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Example Analysis Results: Category 1

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Application of Analysis Results

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Summary

- This report documents a justification for the elimination of core plate bolt inspections. It covers 26 BWRs that do not have core plate wedges installed
- The evaluation addresses

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