

BWRVIP Update

A graphic on the right side of the slide featuring a blue rounded rectangle with a white border. Inside, the word "Nuclear" is written in white. The background of the graphic shows a blurred image of a nuclear reactor core.

Nuclear

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2025 Annual NRC-Industry NDE Technical Information Exchange
Public Meeting

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- Upcoming activities in 2025

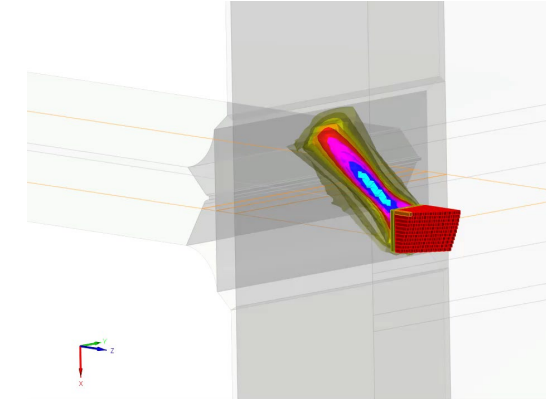


Update on New Inspection Vendor Demonstrations

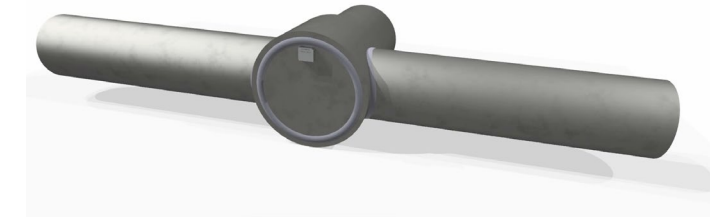
Completed Inspection Vendor UT Demonstrations

- H9 Shroud Support Weld UT
 - Phased array UT from outside surface of RPV
 - 121-element matrix array probe to steer the UT beam into the H9 weld looking up, down, CW, and CCW
 - Simplify scan pattern based on lessons-learned
- In-vessel Core Spray Piping
 - Pipe-to-elbow P4 weld UT
 - Small conventional UT probe to scan from the challenging elbow side of 5" and 6" diameter welds
 - Demonstrated a line-scan pattern based on lessons-learned trying to maintain contact within the elbow intrados using a previous wrist scan technique
 - Core spray T-Box P2 weld UT
 - Pitch-catch matrix phased array probe scans along disc profile of the cover plate surface

H9 weld mockup UT:



P2 weld scan pattern:



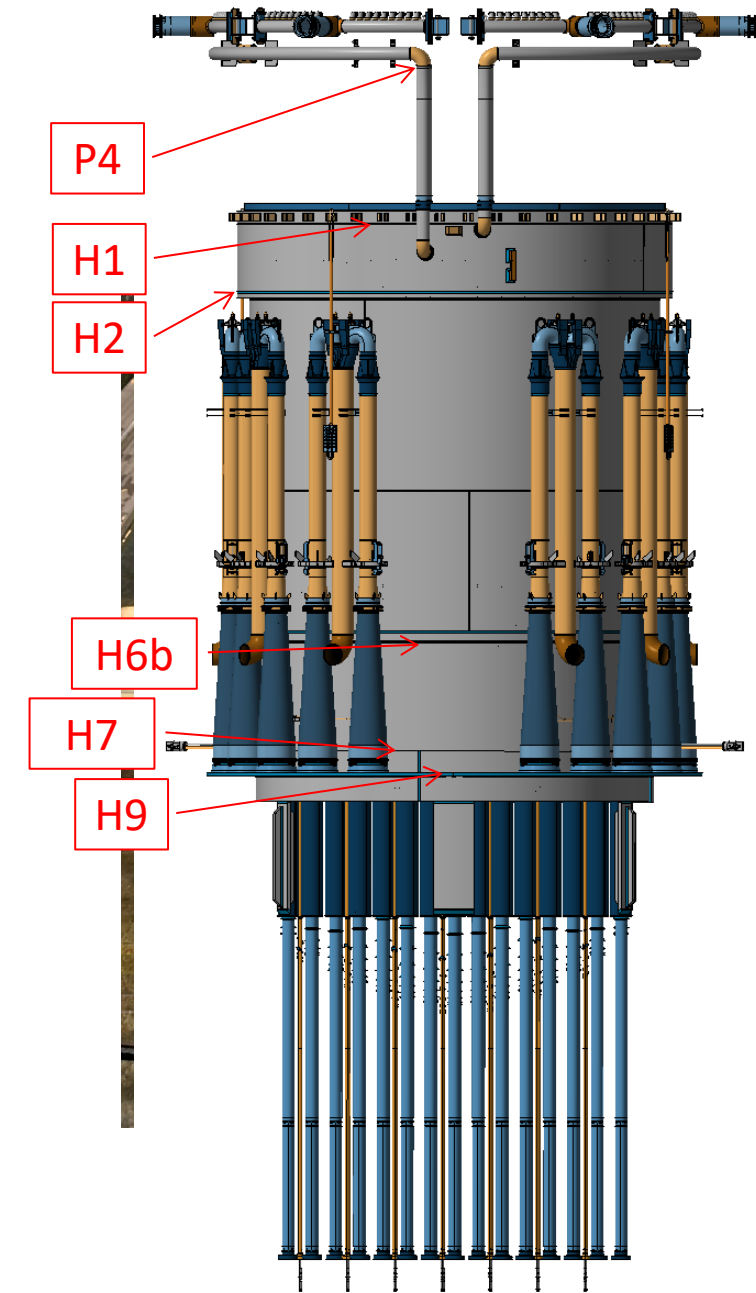
P2 mockup data (2 near-side cracks):



These three demonstrations supported spring 2024 examinations at U.S. BWRs

Demonstrations In-Progress

- Water level instrument penetration UT for roll-expansion repairs
 - NSSS service provider's ongoing development of a repair solution for water level instrument penetrations
 - *When complete, represents a new offering for BWR fleet*
- H9 core shroud support weld UT
 - Linear phased array UT for spring 2025 examination at U.S. BWR/5 and spring 2026 examination at U.S. BWR/4
- H1, H2, & H6b core shroud welds
 - Matrix (H1 & H2) and linear (H6b) phased array UT for spring 2025 examinations at U.S. BWR/4
- H1-H6b core shroud weld and H7 shroud support weld
 - Conventional UT for plants with limited clearances (e.g. BWR/6s)
 - Spring 2025 exam at U.S. BWR/6 and BWR/5 in Mexico



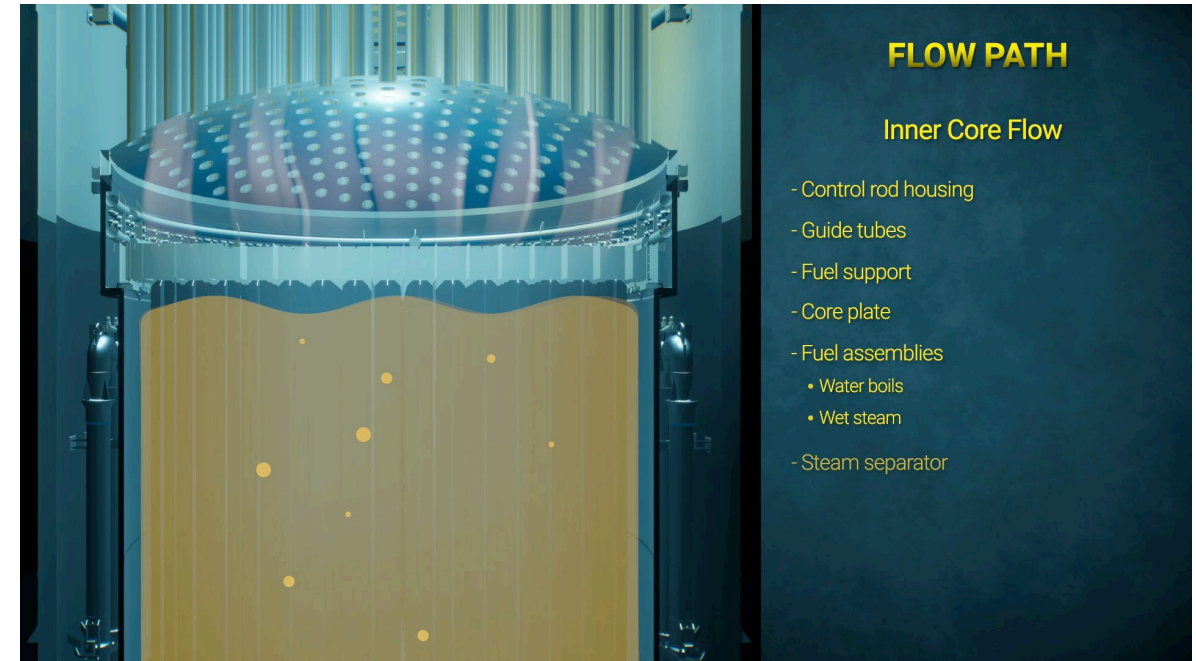


Knowledge Transfer and BWRVIP-03 Demonstration Selection Tool

Knowledge Transfer

- Narrated videos are being created which describe function and inspections of various components
 - Core Shroud
 - Core Spray
 - Flow Path
 - Jet Pumps
- Narration in multiple languages:
 - English
 - German
 - Japanese
 - Spanish
 - Swedish

“BWR Flow Path” Video – advance forward to play:



BWRVIP-03 Online Application is Now Live

- Will replace the need to search through BWRVIP-03 PDF document for NDE demonstrations
 - Interactive search with filters
 - Visualizes components using 3D CAD model with applicable demonstrations annotated
 - Demonstrations can then be filtered using various criteria
 - Demonstration report can then be generated
 - Contains all the previous information plus more detail
 - For example, contains a list of all sites where and when the selected demonstration has been used, the number of welds inspected, and the inspection coverage which was obtained for each examination





Upcoming activates for 2025

Upcoming activities for 2025

- Fabrication of new industry mockups for core shroud weld UT
 - Replace BWRVIP-A, -B, and -C which were fabricated in the mid-1990's
 - Mockup configuration will apply to cylinder side / plate side examinations
 - Existing mockups fabricated before core shroud UTs were performed; new mockup design will incorporate ~25 years of operating experience and lessons learned
- Create additional guidance for examination of low-alloy RPV material surrounding internal attachments
 - Apply EPRI's new manual phased array UT procedure for RPV to BWRVIP H9 and steam dryer support lug mockups to create guidance for interrogating RPV regions surrounding internal welded attachments
- Support EPRI NDE Program Project developing AI for BWR Core Shroud and PWR Core Barrel UT examinations
 - Sections of core shrouds from cancelled units brought to EPRI for initial testing

BWRVIP NDE Update

- Questions?



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