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Davis-Besse Root Cause Review – Status Call 1-26-2012

Davis-Besse – Key staff on call (John Hook and Kevin Browning & others)
RIII- Mel Holmberg, Atif Shaikh, Elba Sanchez-Santiago, James Neurauter, Dan Kimble
NRR- Samuel CuadradoDeJesus and several NRR technical staff

Status of Testing Core Samples

Any plans to salvage freeze/thaw test data? Not initially, since it will not be completed until after mid-February (too late for RC schedule). There will be a corrective action to evaluate results to determine if FE model needs to be updated.

What testing was done on core samples to obtain measured data on the rebar/concrete bond strength for the shield building? None. Have core sample from SB at PII which "nicked" a portion of the rebar and photographs from construction of the access opening which will suffice to evaluate this issue.

Did your vendor request test samples to rule out bond/adhesion issues? No.

Any other core sample tests needed for root cause? No.

Status of Your Team/Contractor Work Products

PII- FMEA-. Preliminary version was due (Jan 25th) did you receive it? Yes. Portions of the FMEA were received and reviewed by FENOC (those which eliminated the less likely causes).

Finite Element Model of the Containment Shield Building (Abaqus Code)- (Jan 30th)? Yes, we are still on track to receive this.

Any more information on Benchmarking ABAQUS software? (e.g. run ABAQUS against another software model to validate results). Plan to run Davis-Besse model and compare with Crystal River containment model results but both are ABAQUS models. No other benchmarking plans and results of this comparison are expected to be documented by the vendor in the RCR.

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Root Cause Report- Explain internal review process once team lead approves it and best guess timeline for these reviews. MPR staff and Vatic Associates will review draft PII report and root cause team lead will incorporate/resolve third party review comments. Once team lead and site managers approve draft report it will go to the Corrective Action Review Board (CARB) and then site VP for final review and approval.

Will you meet February 28th issue and submission date identified in the NRC CAL? Yes.

It is our understanding that the results of the vendor shield building FE modeling done in support of your root cause effort will not be used to validate or be referenced in support of site analysis/calculations that confirm the operability or functionality of the shield building (with cracks). Is our understanding correct? Yes. Because this FE model will not be considered or used in a design calculation it does not need to be under an Appendix B QA program.

Further Explanation (John Hook- Root Cause Team Sponsor) - The FE model will provide stress numbers in the SB at specific locations but actual number is not as important as magnitude of result. For example if model predicts 1500 psi tensile load at a known crack location, this is well above concrete tensile capacity so it validates basis for cracking. In fact, one of the more likely causes at this point is the FE model predictions of stresses in the SB based upon the blizzard of 1978. This blizzard produced sustained winds above 80mph (gusts over 100mph) and had very cold temperatures (high thermal stress with plant on-line). The preliminary FE modeling suggests that these loads combined with the lack of radial hooks in the shoulder regions (areas with extensive cracking) combined to allow tensile stresses well above concrete tensile capacity. Normal winter wind and thermal loads do not approach the magnitude of stress developed during this storm.

Will the final root cause result be used in an updated OE? Yes, the corrective action exists to update the OE with cause of SB cracking.

Will root cause report results be used to validate the adequacy of site programs for managing the aging effects of safety related structures? Yes. The site did not develop the FE or root cause under Appendix B controls but intends to use the result to ensure that they have an adequate structures monitoring program for license renewal aging management.

Status of Purdue Univ Testing (not Used by RCT)-

Background: To evaluate the excess capacity or the bond strength of Lap splice configuration for DB SB rebar configurations. Dr. Sozen of Purdue (concrete expert) and Dr. Darwin Kansas St Univ (Bond strength expert) will collaborate under Bechtel direction to perform test. Licensee will fabricate a beam section with concrete and rebar that matches 28 day strength requirements for DB SB. Beam will be placed in bending until failure by laminar cracking. Then additional tensile capacity of rebar w cracked concrete will be measured. Suspect 30-50%

capacity with this configuration. Result will be used to support a use-as-is disposition for the existing concrete cracking configuration and will not be needed for root cause efforts.

Is this testing going to be conducted under a vendor (Bechtel) or site QA approved Appendix B program? Undecided at this point. Schedule for this testing? Not yet developed.