

**From:** Jacob Zimmerman  
**To:** Borchardt, Richard; Collins, Samuel; Johnson, Jon; Sheron, Brian  
**Date:** Thu, Jan 10, 2002 3:48 PM  
**Subject:** Bulletin 2001-01 Status Report

The attached file contains the latest Status Report for Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles" as of this afternoon, January 10, 2002. Please note that updated information is in red (must be viewed in Word Perfect) and indicated by rev. bars.

FYI - The search has begun for my replacement. A selection should be made in the next week or two for the Lead Project Manager assignment.

If you have any questions or comments, please email or call me. If you would like to be removed from distribution, please let me know.

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**STATUS REPORT**  
**BULLETIN 2001-01, CIRCUMFERENTIAL CRACKING OF REACTOR**  
**PRESSURE VESSEL HEAD PENETRATION NOZZLES**  
**PLANTS WITH REFUELING OUTAGES SPRING 2002**

**PLANTS WITH HIGH SUSCEPTIBILITY OR PRIOR VHP NOZZLE CRACKING**

**Davis-Besse**

Licensee Plans/Commitments: The licensee plans to shutdown for their next refueling outage on February 16, 2002 and perform VHP nozzle inspections. The shutdown date of February 16, 2002, was docketed in a letter dated November 30, 2001.

Planned Meetings & Teleconferences: A meeting with the licensee is being scheduled for the last week of January to discuss their plans for the inspection, flaw evaluation, and repair (if necessary) of the VHP nozzles.

**D. C. Cook, Unit 2**

Licensee Plans/Commitments: The licensee plans to shutdown for their next refueling outage on January 19, 2002 and perform VHP nozzle inspections. The shutdown date of January 19, 2002, was docketed in a letter dated November 30, 2001.

Planned Meetings & Teleconferences: None planned prior to the outage.

**Surry, Unit 2**

Licensee Plans/Commitments: The licensee performed a visual examination at a mid-cycle outage in November, and does not plan to perform any inspection at the RFO scheduled to begin in March 2002.

Planned Meetings & Teleconferences: None needed.

**Oconee, Unit 1**

Licensee Plans/Commitments: The licensee will perform a qualified visual examination at the RFO scheduled to begin April 2002. Prior experience at this unit had one CRDM nozzle and 5 (out of 8) thermocouple nozzles with leakage and cracks. From the recent experience at Unit 3, additional leakage/cracking is anticipated.

Planned Meetings & Teleconferences: None planned prior to the outage.

**PLANTS WITH MODERATE SUSCEPTIBILITY**

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Unless noted otherwise, these plants have committed to perform an inspection consistent with the discussion in Bulletin 2001-01 (an effective visual examination or better).

ANO, Unit 2 (April 2002)

Beaver Valley, Unit 2 (February 2002)

Calvert Cliffs, Unit 1 (February 2002)

Diablo Canyon, Unit 1 (May 2002)

Fort Calhoun (May 2002)

Ginna (March 2002)

Licensee Plans/Commitments: The licensee does not plan to perform any inspection at the next RFO, but has stated plans to replace the RPV head at the next RFO (fall 2003). The staff is reviewing a submittal from the licensee justifying this plan, based on the results of (1) the previous eddy current testing performed in 1999, (2) the crack growth rate analysis developed by Structural Integrity Associates, and (3) the fact that Ginna reactor vessel head temperatures are significantly lower than plants which have seen cracking. The 1999 eddy current test indicated no through-wall cracks, and the crack growth rate analysis using linear elastic fracture mechanics indicated that for the most limiting case (180 degree flaw) the time to grow to the allowable flaw size of 300 degrees is greater than the operating time from the 1999 inspection until the fall 2003 outage when RG&E plans to replace the reactor vessel head. The licensee also indicated that by providing enhanced operator training related to medium break loss of coolant accident, the probabilistic safety assessment results indicated that the conditional core damage probability is equal to 2.252E-03.

Staff Position: The approach proposed by the licensee appears reasonable. The staff is completing its review of the licensee's submittal to determine the adequacy of the justification.

Planned Meetings & Teleconferences: None scheduled.

ACTION ITEM: The staff needs to complete its review of the licensee's justification.

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Millstone, Unit 2 (February 2002)

Licensee Plans/Commitments: The licensee has committed to an inspection that will interrogate the nozzle base material and the weld material using a rotating UT transducer (this plant does not have thermal sleeves in its CRDM nozzles). The licensee is determining the "appropriate sample size of RVHPs necessary to inspect to assure that potential cracks are detected and repaired." (The licensee has concluded that a visual inspection is not viable at this time because of the contoured insulation, presence of asbestos, restricted access, and ALARA concerns.)

Staff Position: The staff has pursued inspection of 100% of VHP nozzles at all plants, an approach borne out by the findings at Crystal River 3 for example, where only 1 nozzle was found with cracking, but this one nozzle had a large circumferential flaw and numerous other through-wall flaws. Therefore, it isn't obvious how a sampling program (of less than 100% of the nozzles) can be demonstrated to meet the objectives of the inspection program intended by the Bulletin.

Planned Meetings & Teleconferences: A meeting with the licensee is being scheduled for the last week of January to present the justification for their sampling plan.

ACTION ITEM: The licensee needs to provide justification for its sampling plan.

Palo Verde, Unit 2 (March 2002)

Licensee Plans/Commitments: From a letter dated December 6, 2001, and subsequent phone calls, the licensee appears to plan an inspection that will be effective in meeting the objectives of the Bulletin. However, the licensee has been reluctant to document a written commitment that provides a sufficient description of the scope (e.g., 100% of the nozzles) and intent (e.g., ECT, PT, or UT of the wetted surfaces) of the inspection.

Staff Position: The staff has requested that the licensee provide a written commitment that sufficiently describes the scope and intent of the inspection. The verbal description provided by the licensee is acceptable.

Planned Meetings & Teleconferences: None planned.

ACTION ITEM: The licensee needs to document a clarification of the scope and intent of their planned inspection.

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Point Beach, Unit 2 (April 2002)

Licensee Plans/Commitments: From a letter dated January 3, 2002, the licensee plans to remove the existing insulation and perform an "effective visual examination" of all VHP nozzles. The licensee will inspect both the removed insulation and the vessel head to identify evidence of leakage. Because of the probability of asbestos, abatement will be required during the removal process, which the licensee does not expect to interfere with the visual inspection.

Staff Position: The inspection planned by the licensee appears to be effective in meeting the objectives of the Bulletin. However, the staff has identified several issues that are needed to demonstrate sufficiency of the planned inspection.

Planned Meetings & Teleconferences: A teleconference is planned for early next week to address the staff issues.

ACTION ITEM: The licensee may need to document a clarification of their inspection plans, pending the results of the teleconference.

Prairie Island, Unit 2 (January 2002)

Salem, Unit 2 (April 2002)

San Onofre, Unit 2 (May 2002)

Turkey Point, Unit 4 (March 2002)

Waterford Unit 3 (March 2002)

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