

From: Jacob Zimmerman
To: Borchardt, Richard; Collins, Samuel; Johnson, Jon; Sheron, Brian
Date: Fri, Jan 18, 2002 1:38 PM
Subject: Bulletin 2001-01 Status Report

JNR

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 18, 2002. Please note that updated information is in red (must be viewed in Word Perfect) and indicated by rev. bars. One major revision this week to include closeout letter status.

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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B-214

PRE-DECISIONAL INFORMATION - NOT FOR PUBLIC DISCLOSURE

STATUS REPORT

**BULLETIN 2001-01, CIRCUMFERENTIAL CRACKING OF REACTOR
PRESSURE VESSEL HEAD PENETRATION NOZZLES**

PLANTS WITH REFUELING OUTAGES SPRING 2002

**PLANTS WITH HIGH SUSCEPTIBILITY TO PRIMARY WATER STRESS CORROSION
CRACKING (PWSCC) 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 public meeting with the licensee is scheduled for January 23, from 10:30 a.m. to 1:00 p.m. in room O-7B4 to provide the licensee an opportunity to discuss their plans for the inspection, flaw evaluation, and repair (if necessary) of the VHP nozzles.

The staff is making plans to visit the site during the planned outage to observe inspections.

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.

The staff is making plans to visit the site during the planned outage to observe inspections.

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.

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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.

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PLANTS WITH MODERATE SUSCEPTIBILITY TO PWSCC

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 public meeting with the licensee is scheduled for January 24, from 9:00 a.m. to 11:30 a.m. in room O-10B4 to provide the licensee an opportunity to present their justification for sampling less than 100% of the nozzles.

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 was held January 17, 2002, with the licensee. The licensee is consulting with vendors to resolve issues associated with inspection techniques. The licensee plans to meet with the staff one month prior to their planned outage to discuss their finalized plans.

ACTION ITEM: The licensee needs to document their commitment to discuss their inspection plans with the staff one month prior to the planned outage.

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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CLOSEOUT LETTERS

Closeout letters have been issued for 48 of the 69 affected units.

PLANTS WITH HIGH SUSCEPTIBILITY TO PWSCC OR PRIOR VHP NOZZLE CRACKING

Plant	Closeout Letter
ANO-1	*
Davis-Besse	*
D.C. Cook 2	01/14/02
North Anna 1	**
North Anna 2	**
Oconee 1	*
Oconee 2	*
Oconee 3	*
Robinson	11/20/01
Surry 1	**
Surry 2	**
TMI-1	01/03/02

- * NRR/DE/EMCB review ongoing
- ** Licensee owes supplemental response

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PLANTS WITH MODERATE SUSCEPTIBILITY TO PWSCC

Plant	Closeout Letter
ANO-2	01/14/02
Beaver Valley 1	12/11/01
Beaver Valley 2	12/11/01
Calvert Cliffs 1	12/06/01
Calvert Cliffs 2	12/06/01
Crystal River 3	*
Diablo Canyon 1	*
Diablo Canyon 2	*
Farley 1	11/08/01
Farley 2	11/08/01
Fort Calhoun	11/08/01
Ginna	*
Indian Point 2	*
Indian Point 3	*
Kewaunee	11/14/01
Millstone 2	**

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Plant	Closeout Letter
Palo Verde 1	**
Palo Verde 2	**
Palo Verde 3	**
Point Beach 1	**
Point Beach 2	**
Prairie Island 1	11/08/01
Prairie Island 2	11/08/01
Salem 1	11/20/01
Salem 2	11/20/01
San Onofre 2	11/20/01
San Onofre 3	11/20/01
St. Lucie 1	11/09/01
St. Lucie 2	11/09/01
Turkey Point 3	11/14/01
Turkey Point 4	11/14/01
Waterford 3	11/23/01

- * Closeout letter in process
- ** Licensee owes supplemental response

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PLANTS WITH LOW SUSCEPTIBILITY TO PWSCC

Plant	Closeout Letter
Braidwood 1	11/14/01
Braidwood 2	11/14/01
Byron 1	11/14/01
Byron 2	11/14/01
Callaway	11/14/01
Catawba 1	12/04/01
Catawba 2	12/04/01
Commanche Peak 1	11/19/01
Commanche Peak 2	11/19/01
DC Cook 1	01/14/02
McGuire 1	11/19/01
McGuire 2	11/19/01
Millstone 3	11/26/01
Palisades	11/08/01
Seabrook	12/03/01
Sequoyah 1	11/20/01
Sequoyah 2	11/20/01
Shearon Harris	12/20/01
South Texas 2	12/14/01
South Texas 1	12/14/01
Summer	12/03/01
Vogtle 1	11/07/01
Vogtle 2	11/07/01
Watts Bar 1	11/20/01
Wolf Creek	11/14/01

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