

October 31, 2001

NOTE TO COMMISSIONER ASSISTANTS

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FROM: John W. Craig /IRA/  
Assistant for Operations, OEDO

SUBJECT: STATUS OF DIALOGUE BETWEEN NRC AND LICENSEES REGARDING  
CIRCUMFERENTIAL CRACKING OF REACTOR PRESSURE VESSEL HEAD  
PENETRATION NOZZLES

On October 3, 2001, the staff briefed the Commissioner's Technical Assistants on the results of the Bulletin 2001-02, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," response reviews for high susceptibility plants and the potential for future Regulatory Action. In an effort to keep the Commissioners abreast of the current status, the staff prepared the attached note. The note provides the current status of those high susceptibility plants for which the staff believes the response to Bulletin 2001-01 does not adequately address the issue. The staff will continue to update the Commissioners on status changes and potential regulatory actions to be taken as changes occur.

Attachment: As stated

cc: W. Travers, EDO (w/o attachment)  
C. Paperiello, DEDMRS (w/o attachment)  
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OCA (w/attachment)  
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OIP (w/o attachment)  
CFO (w/o attachment)  
EDO R/F (w/attachment)  
S. Collins, NRR (w/attachment)  
J. Dyer, RIII (w/attachment)  
E. Merschhoff, RIV (w/attachment)

Information in this record was deleted  
in accordance with the Freedom of Information  
Act, exemptions 4

FOIA- 2002-229

E-51

## CURRENT STATUS OF HIGH SUSCEPTIBILITY PLANTS

### Davis Besse

On September 28, 2001, NRR senior management called FirstEnergy Nuclear Operating Company (FENOC), the licensee for Davis-Besse, regarding the staff's initial assessment of the Bulletin response for the Davis-Besse plant. NRR senior management indicated that the Davis-Besse bulletin response did not provide sufficient basis for delaying their inspection schedule until April 2002, and unless FENOC had new, or additional pertinent information, the staff's position was that Davis-Besse should perform a 100% inspection of VHP nozzles by December 31, 2001. This position was reiterated on a conference call between the staff and FENOC on October 3, 2001.

On October 11, 2001, a drop-in meeting was held between NRR management and FENOC. During this meeting FENOC indicated that they had new information that had not previously been submitted for staff review. In addition, FENOC requested that the staff document its acceptance criteria used to develop the staff position relative to the Davis-Besse plant. The staff agreed to provide FENOC with such documentation once it was available. The staff plans to issue their technical assessment by November 5, 2001. FENOC provided additional information (a finite element analysis to demonstrate the presence of leakage paths for the CRDM penetrations at the operating conditions, and a Framatome risk assessment) to the NRR Project Manager on Friday, October 12, 2001, committed to provide docketed information, and requested a meeting with the NRC staff.

On October 18, 2001, the staff issued a request for additional information (RAI) via e-mail to FENOC regarding the April 2000 Davis Besse nozzle inspection, the finite element analysis of CRDM penetrations, and the Framatome risk assessment. The licensee met with the NRC staff on October 24, 2001, at NRC headquarters. FENOC committed to provide a response to the RAIs by October 31, 2001. In their Bulletin 2001-01 response, the licensee characterized their prior inspections as a qualified visual inspection. However, four nozzles could not be demonstrated to have annular gaps in the licensee's finite element analysis. In addition, the scope of the prior visual inspection only covered 65% of the VHP nozzles due to boric acid deposits from other sources (e.g., canopy seal and Conoseal leaks). The licensee plans to perform a qualified visual examination at the next refueling outage scheduled for April 2002. The prior inspection, even if qualified, was 24 months from the next planned inspection in April 2002, which is more than the 18 month maximum assumed in the staff's justification. Unless the responses to the staff's RAIs are timely and justify the April 2002 schedule, the staff believes the licensee should shut down and perform a 100% qualified visual inspection by December 31, 2001. The staff's technical assessment provides the justification for the maximum of 18 months between prior and planned inspections.

### Surry Unit 2

During their previous outage in Fall 2000, Virginia Electric and Power Company completed a visual inspection of Surry Unit 2, in accordance with Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants." The inspection was performed with the insulation on the head (e.g., not a bare metal inspection as described in Bulletin 2001-01), and would not have been effective in detecting boric acid deposits from VHP nozzle leaks. The licensee plans to perform a qualified visual examination at the next refueling outage scheduled for March 2002. The licensee has not submitted supplemental plant-specific information to demonstrate that their future inspection will be a qualified visual examination. The staff has had numerous conference calls with this licensee to discuss the North Anna

Unit 1 inspection results and inspection plans for the remaining North Anna and Surry Units in an attempt to achieve resolution of the relevant technical issues. Since this plant has not been inspected previously using a "qualified visual examination," the staff believes the unit should be shut-down by December 31, 2001 to facilitate such an examination.

D.C. Cook Unit 2

Indiana Michigan Power Company's original Bulletin response stated that DC Cook Unit 2 intends to perform a remote visual examination of all accessible VHPs under the reactor vessel head insulation during the next (2001) Unit 2 refueling outage. The response also stated that eddy current (ECT) and ultrasonic (UT) examination will also be used. However, due to a recent forced outage, the licensee has decided to delay its outage until January 19, 2002, as confirmed per a conference call on October 9, 2001.

During their outage in Fall 1994, the licensee completed an eddy current examination of the inner diameter of 71 of the 78 VHPs. The results showed three axial indications in one penetration that were subsequently repaired in 1996. The licensee plans to perform a remote visual inspection with ECT and UT at the next refueling outage scheduled for January 2002. The planned inspection in January 2002 is more than 7 years from the prior inspection.

**PLANTS WITH CRACKING/LEAKAGE HISTORY (BIN 1) AND HIGH SUSCEPTIBILITY PLANTS (BIN 2)**

Plants	Last Inspection		Next Inspection			CCDP* (IPE)	Response Acceptable ?	
	Date	Method	Date	Method				
Oconee 1	11/2000	Qual. Visual - 100%	03/2002	OK	Qual. Visual - 100%	OK	1E-2 3.5E-3 (Response)	YES
Oconee 2	04/2001	Qual. Visual - 100%	[REDACTED]	OK	Qual. Visual - 100%	OK	1E-2 3.5E-3 (Response)	YES
Oconee 3	2/2001	Qual. Visual - 100%	11/2001	OK	Qual. Visual - 100%	OK	1E-2 3.5E-3 (Response)	YES
ANO-1	03/2001	Qual. Visual - 100%	[REDACTED]	OK	Qual. Visual - 100%	OK	3E-3	YES
TMI-1	09/1999	Eff. Visual - 100%	10/2001	OK	Qual. Visual - 100%	OK	7.5E-3	YES
Robinson	04/2001	Qual. Visual - 100%**	[REDACTED]	OK ★	Qual. Visual - 100%**	OK★	2E-2	YES★
Surry 1	Spr 2000	GL 88-05 & GL 97-01	10/2001	OK	Qual. Visual - 100%**	OK★	5.3E-3	YES★
North Anna 1	02/1996	ID NDE - 31%	09/01 (completed)	OK	Qual. Visual (100%) & ECT/UT**	OK★	6.6E-3	YES★
North Anna 2	Spr 2001	GL 88-05 & GL 97-01	Prior to 12/31/01****	OK ★	Qual. Visual - 100%**	OK★	6.6E-3	YES★
Davis-Besse	03/2000	Qual. Visual (<100% and >18 months from next planned insp.)	04/2002	NO	Qual. Visual - 100%	OK	6.9E-3	NO
D.C. Cook 2	09/1994	ID NDE - 91%	1/19/2002	NO	Remote Visual & ECT/UT	OK	4.7E-3	NO
Surry 2	Fall 2000	GL 88-05 & GL 97-01	03/2002	NO	Qual. Visual - 100%**	OK★	5.3E-3	NO

\* Conditional core damage probability.

\*\* Licensee stated its intention to submit information to "qualify" the inspection.

\*\*\* Licensee stated its intention to shutdown and perform "qualified" inspection if it could not "qualify" previous inspection.

\*\*\*\* Licensee stated its intention to perform "qualified" inspection of 100% of VHP nozzles prior to 12/31/01.

★ Pending acceptability of licensee's supplemental response.

As of 10/22/01

*EX-1*

**PLANTS HAVING MODERATE SUSCEPTIBILITY TO PWSCC AS OF 10/22/2001**

Plant	Ranking (EFPY)	Next Inspection			Response Acceptable?
		Date	Method		
Beaver Valley 1	11.5	Sept. 2001	Eff. Visual (100%) in Sept. 2001	OK	YES
Beaver Valley 2	16.5	Feb. 2002	Eff. Visual (100%) in Feb. 2002	OK	YES
Calvert Cliffs 1	9.8	Feb. 2002	Eff. Visual (100%) or Qual. Vol., Feb. 2002	OK	YES
Calvert Cliffs 2	10.2	[REDACTED]	Eff. Visual (100%) or Qual. Vol., [REDACTED]	OK	YES
Crystal River 3	5.9	Oct. 2001	Eff. Visual (100%) in Fall 2001	OK	YES
Diablo Canyon 1	20.8	May 2002	Eff. Visual (% not specified) in May 2002	OK	YES
Diablo Canyon 2	16.1	[REDACTED]	Eff. Visual (% not specified) [REDACTED]	OK	YES
Farley 1	6.9	Oct. 2001	Eff. Visual (All) in Oct. 2001	OK	YES
Farley 2	8.3	[REDACTED]	Eff. Visual (All) or Qual Vol., [REDACTED]	OK	YES
Fort Calhoun	17.9	Apr./May 2002	Eff. Visual (100%) in Spring 2002	OK	YES
Kewaunee	21.9	Oct. 2001	Eff. Visual (100%) in Fall 2001	OK	YES
Point Beach 1	11.5	[REDACTED]	Eff. Visual (100%) in [REDACTED]	OK	YES
Point Beach 2	9.6	April 2002	Eff. Visual (100%) in Spring 2002**	OK	YES
Prairie Island 1	26.7	[REDACTED]	Eff. Visual (All) in [REDACTED]	OK	YES
Prairie Island 2	26.8	Feb. 2002	Eff. Visual (All) in Feb. 2002	OK	YES
Salem 1	13.8	[REDACTED]	Eff. Visual (All) in [REDACTED]	OK	YES
Salem 2	17.4	Apr. 2002	Eff. Visual (All) in Apr. 2002	OK	YES
San Onofre 2	10.7	May 2002	Eff. Visual (All) or Qual Vol., May 2002**	OK	YES
San Onofre 3	10.8	[REDACTED]	Eff. Visual (All) or Qual Vol., [REDACTED]	OK	YES
St. Lucie 1	10.3	[REDACTED]	Eff. Visual (100%) in [REDACTED]	OK	YES
St. Lucie 2	11.3	Nov. 2001	Eff. Visual (100%) in Nov. 2001*	OK*	YES*
Turkey Point 3	6.3	Oct. 2001	Eff. Visual (100%) in October 2001	OK	YES
Turkey Point 4	6.4	Mar. 2002	Eff. Visual (100%) in Spring 2002	OK	YES
Waterford 3	7.8	Mar. 2002	Eff. Visual (% not specified) in Spring 2002	OK	YES
GINNA	15.0	Mar. 2002	Not Specified (notify 1/02)***	?	?
Millstone 2	14.3	Feb. 2002	Not Specified (notify 1/02)***	?	?
ANO-2	17.1	April 2002	Surface or Vol. of 25% in Spring 2002****	NO	NO
Indian Point 2	26.6	[REDACTED]	GLs 88-05 & 97-01****	NO	NO
Indian Point 3	14.5	[REDACTED]	GLs 88-05 & 97-01****	NO	NO
Palo Verde 1	17.0	[REDACTED]	None (Vol. in [REDACTED])	NO	NO
Palo Verde 2	17.7	May 2002	None (Vol. [REDACTED])	NO	NO
Palo Verde 3	17.3	Sept. 2001	None (Vol. in [REDACTED])	NO	NO

- \* In a telecon on 10/23/01 the licensee stated its intention to perform a 100% eff. visual insp to be accomplished by a combination of under insulation visual, removal of insulation and performing visual and UT.
  - \*\* Documented reservations regarding achieving 100% inspection.
  - \*\*\* Licensee stated its intention to provide more information to the staff regarding the scope and schedule of inspection.
  - \*\*\*\* Licensee stated that it would reconsider its position re: scope of inspection and would provide feedback to the staff.
  - \* Pending acceptability of licensee's supplemental response.
- As of 10/22/01**

*EVA*