

From: Jacob Zimmerman } NRR
To: Hiser, Allen; Lee, Andrea
Date: 11/13/01 9:35AM
Subject: Commissioners' TA Briefing

Allen/Andrea

The Commissioners' TA Briefing on CRDMs has not been officially scheduled yet, but looks like it may be tomorrow at noon. Working with that assumption, let's start putting together, actually updating and fine tuning last weeks EDO briefing package, in anticipation of the briefing.

Would one of you please take the lead for updating the briefing package? I will be out of the office tomorrow morning (new house, pre-settlement walk through), but will return in the afternoon. Larry will be back in the office tomorrow and should be able to provide any needed assistance.

What I get the official details I'll let you all know.

Thanks,
Jake

CC: Barrett, Richard; Bateman, Bill; Burkhart, Lawrence; Chokshi, Niles; Chung, Jin; Eltawila, Farouk; Hackett, Edwin; Long, Steven; Marsh, Tad; Reinhart, F. Mark; Sheron, Brian; Strosnider, Jack; Wichman, Keith; Zwolinski, John

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E-34



Executive Director for Operations Brief

Wednesday, November 7, 2001

10:15 a.m. - 11:15 a.m.

Room: O-17B4

Purpose: 1) To discuss updated results of the staff's review of responses to Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles."
 2) To discuss the basis for Order(s).

Success: EDO understands the results of the staff's review and basis for the Order(s).

Introduction:	Jake Zimmerman	5 mins.
Discussion of updated results of the staff's review:	Allen Hiser	15 mins.
Discussion of Basis for Order(s):	Larry Burkhardt	15 mins.

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	Method	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%		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%		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%**		OK	Qual. Visual - 100%**	OK	2E-2	YES
Surry 1	Spr 2000	GL 88-05 & GL 97-01	Ongoing	OK	Qual. Visual - 100%**	OK	5.3E-3	YES
Surry 2	Fall 2000	GL 88-05 & GL 97-01	Prior to 12/31/01***	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	Ongoing	OK	Qual. Visual - 100%**	OK	6.6E-3	YES
D.C. Cook 2	09/1994	ID NDE - 91%	1/19/2002	NO	Remote Visual & ECT/UT	OK	4.7E-3	NO
Davis-Besse	03/2000	Not a qual. visual of 100% of nozzles.	04/2002	NO	Qual. Visual - 100%	OK	6.9E-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 11/07/01

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PLANTS HAVING MODERATE SUSCEPTIBILITY TO PWSCC

Plant	Ranking (EFPY)	Next Inspection				Response Acceptable?
		Date	Method	Method	Method	
ANO-2	17.1	April 2002	Eff. Visual, Vol. Surface (100%) in Spring 2002	OK	YES	
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		Eff. Visual (100%) or Qual. Vol.	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 (100%) in May 2002	OK	YES
Diablo Canyon 2	16.1		Eff. Visual (100%) in	OK	YES
Farley 1	6.9	Oct. 2001	Eff. Visual (All) in Oct. 2001	OK	YES
Farley 2	8.3		Eff. Visual (All) or Qual Vol.	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
Prairie Island 1	26.7		Eff. Visual (All)	OK	YES
Prairie Island 2	26.8	Feb. 2002	Eff. Visual (All) in Feb. 2002	OK	YES
Salem 1	13.8		Eff. Visual (All)	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		Eff. Visual (All) or Qual Vol.	OK	YES
St. Lucie 1	10.3		Eff. Visual (100%)	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 (100%) 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)	?	?
Point Beach 1	11.5		Eff. Visual (100%) in	?	?
Point Beach 2	9.6	April 2002	Eff. Visual (100%) in Spring 2002	?	?
Indian Point 2	26.6		GLs 88-05 & 97-01	NO	NO
Indian Point 3	14.5		GLs 88-05 & 97-01	NO	NO
Palo Verde 1	17.0		None (Vol. in	NO	NO
Palo Verde 2	17.7	May 2002	None (Vol. in	NO	NO
Palo Verde 3	17.3	Sept. 2001	None (Vol. in	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 11/07/01

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PLANTS THAT HAVE PERFORMED "BARE METAL" VISUAL INSPECTIONS

Plants	Most Recent Inspection				
	Date	Method & Scope	Summary of Cracked or Leaking CRDM Nozzles		
			Total Number	Circumferential Nozzle Cracks	Number Repaired
Oconee 1	11/2000	Qualified Visual - 100%	1	0	1
Oconee 3	02/2001	Qualified Visual - 100%	9	3	3
ANO-1	03/2001	Qualified Visual - 100%	1	0	1
Oconee 2	04/2001	Qualified Visual - 100%	5	1	5
Robinson	04/2001	Qualified Visual - 100%	0	0	0
North Anna 1	09/2001	Qualified Visual - 100%	8	0	0
Crystal River 3	10/2001	Effective Visual - 100%	1	1	1
TMI-1	10/2001	Qualified Visual - 100%	8	0	6
Surry 1 (in progress)	10/2001	Qualified Visual - 100%	10	TBD	5
North Anna 2 (in progress)	10/2001	Qualified Visual - 100%	(3)	TBD	TBD

- Thermocouple nozzles also cracked/leaking: Oconee 1 (5 out of 8), TMI 1 (8 out of 8)
- The size of 2 out of 3 circumferential flaws were identified from destructive examination.

- Pending acceptability of licensee's supplemental response
- The highest ranked MODERATE susceptibility plant.
Moderate susceptibility plants that have completed effective visual examinations in Fall 2001 with no evidence of boric acid deposits:
Beaver Valley 1, Farley 1, Kewaunee, and Turkey Point 3

DAVIS BESSE

- **Previous Inspections**

- 10th RFO 1996 - Visual Examination of 65 out of 69 CRDMs (94%)
 - 4 CRDMs (center head) not examined since licensee evaluation showed insufficient interference gap
- 11th RFO 1998 - Visual Examination of 50 out of 69 CRDMs (72%)
 - 19 Obscured by boric acid from leaking motor tube flanges and Not Examined (includes 4 CRDMs with insufficient gap and 15 new nozzles obscured)
- 12th RFO 2000 - Visual Examination of 45 out of 69 CRDMs (65%)
 - 24 Obscured by boric acid and Not Examined (includes 4 CRDMs with insufficient gap and 15 obscured in 1998)

- **Planned Future Inspections**

- Qualified Visual Examination April 2002

- Some form of qualified NDE (UT, ECT, PT) for 4 CRDMs with insufficient gap; supplemental response with details by January 29, 2002

- RAI Response Submitted October 31, 2001 - Still Under Staff Review

D. C. COOK UNIT 2

- **Previous Inspections**

Fall 1994 - eddy current examination (ECT) of ID of 71 of the 78 VHPs

Three axial indications in one CRDM; repaired in 1996

- **Planned Future Inspections**

Remote visual inspection with ECT and UT at next RFO - January 19, 2002

Planned inspection in January 2002 is more than 7 years from the prior inspection

SURRY UNIT 2

- **Previous Inspections**

Fall 2000 - inspection performed with the insulation on the head (e.g., not a bare metal inspection as described in Bulletin 2001-01)

- Would not have been effective in detecting boric acid deposits from VHP nozzle leaks

Inspection of Surry Unit 1 (on-going) has identified 10 cracked/leaking nozzles and a need to repair 5 nozzles

- **Planned Future Inspections**

Bulletin response - Qualified visual examination at the next RFO - March 2002

Telecon on November 2 - will shutdown for examination before December 31, 2001

Licensee has not submitted supplemental plant-specific information to demonstrate qualification of the visual examination method

RECOMMENDED ORDERS
RE: RESPONSES TO BULLETIN 2001-01

- Staff recommends issuance of orders for those high susceptibility ranked plants and those plants that have experienced VHP nozzle cracking that do not plan to conduct the recommended inspections by December 31, 2001,
- A potentially hazardous condition exists (i.e., it is reasonable to assume that the reactor coolant pressure boundary is compromised at these facilities),
- Licensees have not provided sufficient basis to continue to operate without performing the recommended inspections by December 31, 2001,
- Given the uncertainties surrounding this crack initiation and growth phenomenon and the extent of VHP cracking already observed at 9 plants,
- Results of inspections have not revealed conditions of incipient failure

Davis-Besse

- Proposed to shutdown in late March 2002 to perform the recommended inspections,
 - High-susceptibility plant,
 - The licensee has never performed a qualified visual inspection of all of the VHP nozzles (these inspections were not effective with regard to the ability to detect the very small amounts of boric acid deposits),
 - 9 of 10 similarly-ranked plants have found some form of VHP nozzles cracking,
 - Every other B&W plant has found some form of VHP nozzle cracking (Davis-Besse is the only B&W plant that has not inspected),
 - 3 of 6 B&W plants that have already inspected have found circumferential cracking,

- Order will be immediately effective and
 - Require plant shutdown by December 31, 2001, and
 - Require demonstration, by inspection, that all of the VHPs are free of defects (cracks), and
 - Prohibit power operation until the licensee demonstrates acceptability of the results of the inspection to the staff.

D. C. Cook

- Originally proposed to conduct inspection in 2001. Due to a forced outage earlier in the year, the licensee delayed the refueling outage and inspections until January 2002,
 - However, the licensee did not commit to a "qualified" visual inspection,
 - Experienced VHP cracking (axial) in 1994,
 - It is reasonable to assume the plant continues to have the problem.

- Order will be immediately effective and
 - Require plant shutdown by December 31, 2001, and
 - Require demonstration, by inspection, that all of the VHPs are free of defects (cracks), and
 - Prohibit power operation until the licensee demonstrates acceptability of the results of the inspection to the staff.

Response to Chairman Meserve's Questions**What are the critical issues that still need to be resolved before making a final decision?**

From the staff's perspective there are no technical issues to be resolved. Licensees may disagree with this conclusion. The Orders are in the final stages of development ensuring appropriate concurrences from other Offices such as OGC and OE. The staff intends to forward the plant specific Orders to the Commission with a cover memo providing five working days for Commission review.

When is a decision going to be made and what is the time line?

The staff is continuing to take a two pronged approach in addressing CRDM nozzle cracking. The first approach continues to be the staff's evaluation of plant specific information which may justify continued operation until the licensees next scheduled outage, thus precluding a premature plant shut down. The second approach which the staff has now completed, has been the development of a comprehensive deterministic evaluation which includes results from inspections to date. This second approach has resulted in the issuance of our Preliminary Technical Assessment for CRDM nozzle cracking. In addition to the development of this technical report, the staff has prepared plant specific Orders which take into account risk considerations in accordance with R. G. 1.174. The staff continues to review plant specific information for the two plants of concern. Both Davis Besse and D. C. Cook, have provided the NRR staff with additional information as recently as November 6th. Davis Besse also would like to show a video of past reactor vessel head inspections. This is being arranged for late in the afternoon of November 8th. NRR staff and management are prepared to move forward and issue Orders.

How are we going to interact with the affected licensees once a decision is made (e.g., are we going to tell them in a meeting)?

Prior to issuing plant specific Orders, the NRR Office Director will contact each licensee and inform them of the staff's decision. This phone conversation will not only alert the two licensees to the proposed staff action but also afford each licensee the option of voluntarily committing to shut down and inspect by 12/31/01 without the issuance of an Order.