DAILY STATUS REPORT

RE: UNRESOLVED RESPONSES TO THE BULLETIN 2001-01 FOR HIGH SUSCEPTIBILITY PLANTS AND THOSE PLANTS THAT HAVE EXPERIENCED VHP NOZZLE CRACKING

NOVEMBER 20, 2001

7:00 P.M.

❑ Davis-Besse

Licensee Plans/Commitments: The licensee plans to shutdown and perform Bulletin recommended inspections in April 2001.

NRC Staff Position: The staff has based its safety concerns with Davis-Besse (DB) on recent inspection experience finding evidence of cracking for plants similar to DB. The staff notes that (1) DB is a high susceptibility plant per the Bulletin, and 10 out of the 11 high susceptibility plants that have performed inspections have found cracking or leakage (two plants have yet to perform inspections, including DB); (2) the other six B&W plants have performed inspections and have found cracking (DB is the only B&W plant that has not inspected), with three of the six B&W plants finding circumferential cracks; and (3) DB has the highest head temperature at operating conditions for any B&W plant (605°F) (operation at higher temperatures increases susceptibility to cracking). Based on the above, it is reasonable to conclude that DB may have cracks that could challenge the integrity of the reactor coolant pressure boundary. It is the staff's position that the licensee can provide reasonable assurance of reactor coolant pressure boundary integrity by performing inspections by December 31, 2001, as recommended in the bulletin.

The licensee has sought to justify continued operation until its scheduled refueling outage at the end of March 2002 using the results of prior inspections (from 1996 to the present) and both deterministic and probabilistic risk assessments. The staff has reviewed the risk assessment provided by DB and concluded that the methodology employed by the licensee appears to be reasonable. However, the staff has numerous questions regarding input parameters and assumptions used in the assessments, including inadequate data and high uncertainty in several cases. Regarding prior inspections, the licensee has stated that four nozzles cannot be inspected using a qualified visual examination due to an inadequate leakage path for these nozzles; one of these four nozzle locations has exhibited circumferential cracking on the nozzle outside diameter at Oconee Unit 3 in within the last week.

Next Regulatory Action: Based on comments of the Executive Director for Operations (EDO) and staff, the proposed Order is being revised and a new memorandum that will forward the Order to the EDO is planned to be issued tomorrow, 11/21/01. The Order is planned to be issued 5 working days after the memorandum informing the Commission is issued.

Meetings & Conf. Call Summaries: A teleconference was held between EMCB and the DB licensee on Thursday, November 14. The purpose of the call was to summarize the staff's assessment of the DB bulletin response. The summary for this teleconference held on Thursday, November 14, will be issued today.

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In this teleconference with the licensee, the staff provided its position, as described above, to allow the licensee to focus on items that could provide the staff with a basis to modify its position and find that DB can operate until its scheduled refueling outage in late March 2002. One possibility described by the staff was for the licensee to identify and justify features or factors that would indicate that DB should not be included in the population of high susceptibility plants. The staff also reiterated its intent to continue discussions with the licensee, as appropriate.

INTERESTING NOTE: The resident Inspector for DB sat in on a licensee's morning management meeting and observed that licensee management expressed cautious optimism that the NRC would approve their (licensee's) plans to defer the inspections until April 2002. This is contrary to the message provided to DB management in the teleconference on Thursday, November 14.

❑ D. C. Cook, Unit 2

Licensee Plans/Commitments: The licensee plans to shutdown and perform inspections on January 19, 2002. The inspection methods proposed by the licensee are not consistent with the recommended inspections described in the bulletin.

NRC Staff Position: Based on its review of information provided by the licensee and results of inspections conducted at other facilities, the staff has concluded that deferral of the inspections at D.C Cook 2 until the next outage, which begins on 1/19/01, is acceptable.

Next Regulatory Action: Based on its review of information provided by the licensee and results of inspections conducted at other facilities, the staff has concluded that deferral of the inspections at D.C Cook 2 until the next outage, which begins on 1/19/01, is acceptable. Therefore, no Order is proposed for D.C Cook 2.

Meetings & Conf. Call Summaries: A public meeting was held with the licensee today, 11/20/01, to discuss information regarding this issue.

❑ North Anna, Units 1 and 2

Licensee Plans/Commitments: The NRC received a supplemental response on November 19, 2001, regarding information to qualify the fall inspections for North Anna and Surry Units.

NRC Staff Position: During an inspection in October 2001, the licensee identified several nozzles with cracking on the inside diameter of the nozzle and penetrant testing (PT) indications on the J-groove welds. The licensee determined that the nozzle cracking did not require repair. A staff review of the PT records concurred with the licensee's conclusions that the indications appeared to be surface indications and not relevant to a cracking mechanism. Via letter dated November 19, 2001, the licensee provided the documentation to support a

"qualified visual" analysis to demonstrate acceptability of using "design" dimensions of the VHP penetrations and nozzles. The staff is reviewing this information.

North Anna, Unit 2, has a special outage for nozzle inspections in progress. Results from the visual examination indicated several nozzles that appeared to have boric acid deposits consistent with the findings at the Oconee plants and Crystal River Unit 3. Thus far the licensee has identified one of these nozzles with a through-wall crack in the J-groove weld (event report #38498). This crack was identified by the licensee due to staff insistence that the licensee destructively confirm the benign nature of PT indications on the J-groove welds dispositioned by the licensee as surface only and not relevant to a cracking mechanism. Repairs are being conducted on this nozzle and additional examinations are underway on two other suspect nozzles. Ultrasonic examination of the inside diameter of these three nozzles identified no cracking in the nozzle base metal.

With the findings at Unit 2, the staff will address with the licensee the PT findings at Unit 1.

Next Regulatory Action: None planned at this time.

Meetings & Conf. Call Summaries:
10/5/01- Conference call held to discuss the number of VHP penetrations to be inspected at North Anna, Unit 1.

10/24/01 - Conference call held to discuss the qualification of the visual exams to be conducted at North Anna, Units 1 and 2.

Drop-in visits were held by the licensee with the Commissioners and the EDO on November 19, 2001. A general status of the nozzle inspections at the North Anna and the Surry plants was provided by the licensee.

❑ **Surry, Units 1 and 2**

Licensee Plans/Commitments: The NRC received a supplemental response on November 19, 2001, regarding information to qualify the fall inspections for all North Anna and Surry Units.

Licensee shutdown Unit 2 on 11/19/01 to perform the recommended inspections. Visual inspections to begin 11/24/01.

NRC Staff Position: Surry Unit 1 has an outage in progress. The licensee is nearing completion of repairs on six penetrations (this is a correction as the last DST stated that only 5 repairs were ongoing) at Surry Unit 1. As mentioned above, the licensee shutdown Surry Unit 2 on 11/19/01 to conduct the inspections.

Staff will review the licensee's supplemental response regarding qualification of visual inspections for these units.

Next Regulatory Action: None planned at this time.

Meetings & Conf. Call Summaries:
10/12/01- Surry agreed to provide a supplement to their Bulletin response addressing qualified visual inspection (supplement sent 11/14/01). Still uncertain as to when Surry 2 would be inspected.

10/31/01 - NRC gave verbal relief for Surry Unit 1 relief requests SR-27 and SR-28 so that repair of cracks could proceed. Relief was based on NRC questions and licensee responses in previous North Anna phone calls (Surry Unit 1 relief and North Anna Unit 1 reliefs previously submitted, reviewed and withdrawn) and previous similar reliefs granted for Duane Arnold, Fitzpatrick, and Nine Mile Point.

11/6/01 - Surry agreed to docket a commitment to provide evidence of weld procedure qualification for P43 to P3 with F43 filler. Also agreed to provide analyses for weld repair and flaw evaluation prior to restart. Also agreed to address crack triplepoint, and to state there will be a PT report documenting J weld crack.

VHP NOZZLE INSPECTIONS/RESULTS
NOVEMBER 20, 2001
7:00 P.M.

- **Crystal River, Unit 3**

Inspections completed in October 2001. The licensee identified one leaking CRDM nozzle with a 90° circumferential crack which was subsequently repaired. The staff notes that the licensee did not perform any destructive examination to further characterize the flaw. This is the highest ranked moderate susceptibility plant.

- **North Anna, Unit 1**

Inspections completed in September 2001. The licensee identified eight shallow axial cracks below the J-groove weld and penetrant testing (PT) indications on the J-groove welds. The licensee did not perform any repairs because these cracks were not part of the reactor coolant pressure boundary. A staff review of the PT records concurred with the licensee's conclusions that the indications appeared to be surface indications and not relevant to a cracking mechanism.

- **North Anna, Unit 2**

North Anna, Unit 2, found a through-wall leak in a CRDM nozzle (event report issued). Repairs are being conducted on this nozzle and additional examinations are underway on two other suspect nozzles. Ultrasonic examination of the inside diameter of these three nozzles identified no cracking in the nozzle base metal.

- **Surry, Unit 1**

The licensee is nearing completion of repairs on six penetrations (this is a correction as the last DST stated that only five repairs were ongoing).

- **Surry, Unit 2**

The licensee shutdown Unit 2 on 11/19/01 to conduct the recommended inspections. The inspections are expected to commence on 11/24/01.

- **TMI-1**

Following shutdown for a scheduled refueling outage in October 2001, TMI-1 performed visual inspections of the reactor vessel CRDM nozzles as recommended in NRC Bulletin 2001-01. The inspections revealed axially-oriented flaw indications in eight CRDM nozzles, six nozzles were found to have cracks within the pressure boundary (five nozzles had through-wall cracks and one did not), the other two nozzles had cracks that

were outside the pressure boundary. The licensee completed Code repairs on all six of the CRDM nozzles that had flaws within the pressure boundary. Additionally, the licensee performed visual inspections of the eight thermocouple (T/C) nozzles and found evidence of leakage on all of them. Two of the leaking T/C nozzles were replaced and the remaining six were plugged in accordance with Code requirements or as allowed by an NRC-approved relief request. These corrective actions are complete.

❑ Oconee, Unit 3

The licensee initially identified cracking in February of 2001 (nine leaking CRDMs, three circumferential cracks) during a maintenance outage. On November 12, 2001, after only seven months of operation following its previous inspection and during its regularly scheduled refueling outage Oconee, Unit 3, identified indications of leakage evidenced by boric acid buildup around four CRDM nozzles. Three additional nozzles were categorized as potential leaking nozzles and require further inspection. The licensee expects to conduct additional inspections during the weekend of November 17, 2001.

As of the morning of Monday, November 19, 2001, nine CRDM nozzles have been ultrasonically examined. These nozzles include the four nozzles that had visual indications of leakage, the three nozzles that were categorized as potential leakers based on visual examination results, and two additional nozzles. UT has verified that five nozzles have through-wall cracks. One nozzle (nozzle 2) has a circumferential indication which is not through-wall (approximately. 48 degrees in length).

A telecon was held with the licensee to discuss preliminary results of its inspections of 9 control rod drive mechanism (CRDM) nozzles (4 exhibited visual indications of leakage, 3 were suspected leakers, and 2 others that were accessible due to the removal of the CRDMs).

Summary of potentially significant results (preliminary results only):

(1) 1 nozzle indicated a circumferential crack above the J-groove weld (not through-wall) at about 48 degrees,

(2) other nozzles had indications of ID- and OD-intiated axial cracking (mostly OD-intitiated and some through-wall), and

(3) based on the indications, the licensee is currently planning to repair 7 nozzles. Interestingly, one of the 7 nozzles to be repaired is a nozzle that had no visual indications of leakage.

The licensee anticipates finalizing its results and its decision regarding expansion of inspections in a a few days.

A call was tentatively scheduled for Monday, 11/26/01, at 1:30 to discuss these results.

MODERATE SUSCEPTIBILITY PLANT INSPECTION RESULTS
NOVEMBER 20, 2001
7:00 P.M.

The following plants have performed the recommended inspections as defined in Bulletin 2001-01 this fall and found no indications of leakage. All of these plants are ranked as moderately susceptible to primary water stress corrosion cracking. The licensee for these plants performed 100% bare metal visual inspections.

Beaver Valley, Unit 1
Farley, Unit 1
Kewaunee
Turkey Point, Unit 3

St. Lucie, Unit 2, has an outage scheduled to start on 11/26/01. Inspections should commence on or about 11/30/01.

No other moderate plants are scheduled for outages before 12/31/01.