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U. S. Nuclear Regulatory Commission
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BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324/LICENSE NO. DPR-62
FEEDWATER SPARGER AND SAFE END EXAMINATIONS

Ladies and Gentlemen:

Carolina Power & Light (CP&L) Company is providing, in accordance with the guidance contained in NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," the enclosed summary of nondestructive examination (NDE) results for feedwater sparger and safe ends examinations performed during Brunswick Steam Electric Plant (BSEP), Unit 2 Refueling Outage 14 (i.e., B215R1).

Please refer any questions regarding this submittal to Mr. Leonard R. Beller, Supervisor - Licensing/Regulatory Programs, at (910) 457-2073.

Sincerely,

Edward T. O'Neil
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Brunswick Steam Electric Plant

WRM/wrm

Enclosure: Summary of Feedwater Sparger and Safe End Examinations

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cc (with enclosure):

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ENCLOSURE

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DOCKET NO. 50-324/LICENSE NO. DPR-62
FEEDWATER SPARGER AND SAFE END EXAMINATIONS

Summary of Feedwater Sparger and Safe End Examinations

In accordance with the guidance contained in NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," Carolina Power & Light (CP&L) Company is providing the enclosed summary of nondestructive examination (NDE) results for feedwater sparger and safe ends examinations performed during Brunswick Steam Electric Plant (BSEP), Unit 2 Refueling Outage 14 (i.e., B215R1).

1. START-UP/SHUTDOWN CYCLES EXPERIENCED:

BSEP, Unit 2 has experienced 176 start-up/shutdown cycles since initial plant start-up. This includes four start-up/shutdown cycles since the Refueling Outage 13 (i.e., B214R1) inspections.

2. NON-DESTRUCTIVE EXAMINATION RESULTS:

The eight circumferential welds connecting the sparger arms to the junction boxes and the four circumferential welds connecting the spargers to the thermal sleeves were visually (i.e., MVT-1) inspected, to the extent possible, with a remote camera. There has been no appreciable change to the observed indications from the previous inspection. For six operating cycles, there have been no observed changes in the largest previously measured circumferential crack connecting the sparger arm to the sparger tee.

The flow holes in each of the feedwater spargers were visually inspected. No relevant indications were noted during the VT-3 examination of the sparger pipe for lost parts and general structural integrity. However, as in previous inspections, relevant indications were noted around the sparger flow holes during the examinations. Cracks at a selected flow hole on each sparger were inspected using EVT-1 methodology, and the results were compared to previous inspection results. The comparison indicates no observable change in crack lengths since the last inspection.

Additionally, the feedwater nozzle blend radii were visually (i.e., EVT-1, VT-3) examined on the inside diameter and ultrasonically (UT) examined from the outside diameter for cracking. No recordable indications resulted from these inspections.

3. NON-DESTRUCTIVE EXAMINATION METHODS:

In June 1992, CP&L submitted the results from the non-destructive examination of the BSEP, Unit 2 feedwater spargers, performed during Refueling Outage 9, to the NRC for review. Also, with the results, CP&L proposed to monitor the crack growth during Refueling Outage 10 (i.e., B211R1) by visual examination using a high resolution remote camera instead of using a liquid penetrant (LP) technique. The NRC concurred with the visual inspection method in a letter dated June 24, 1993.

Subsequently, by letter dated February 3, 1995, CP&L requested NRC concurrence with plans to perform visual (i.e., VT-1) examinations during future inspections of the BSEP, Unit 1 and 2 feedwater spargers in lieu of LP examinations. NRC concurrence with these plans was documented in a letter dated March 16, 1995.

The four feedwater spargers were visually examined during the refueling outage using a high resolution remote underwater camera. The spargers were examined for gross defects and missing fragments. The feedwater sparger flow holes were inspected for loose or missing parts and cracking. The circumferential welds were inspected, to the extent possible, with the remote camera. The video tapes of the visual inspections during this outage were compared with the video tapes of the inspections performed during the previous outage. No significant changes were identified.

4. SYSTEM MODIFICATIONS AFFECTING FEEDWATER FLOW AND/OR TEMPERATURE:

A Digital Feedwater Control System was installed in BSEP, Unit 2 in 1994. This system provides improved stability in feedwater control (i.e., fewer flow fluctuations during low power operation).

5. ON-LINE LEAKAGE MONITORING:

BSEP, Unit 2 does not have an on-line leakage system for the detection of feedwater leakage past the feedwater nozzle thermal sleeves.