CP&L

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JAN 1 0 1996

SERIAL: BSEP 95-0663

U. S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324/LICENSE NO. DPR-62
NUREG-0619 INSPECTIONS OF FEEDWATER NOZZLES AND SPARGERS

Gentlemen:

The purpose of this letter is to provide additional information regarding Carolina Power & Light Company's letters dated August 17, 1995 (Serial No. BSEP 95-0094), October 9, 1995 (Serial No. BSEP 95-0459), and November 14, 1995 (Serial No. BSEP 95-0563). These submittals advised the Nuclear Regulatory Commission (NRC) of CP&L's revised plans for replacement and inspection of the feedwater nozzle blend radii for the Brunswick Steam Electric Plant, Unit No. 2. The information enclosed is being provided in response to a November 30, 1995 telephone conversation between CP&L and members of the NRC Staff.

Please refer any questions regarding this submittal to Mr. George Honma at (910) 457-2741.

Sincerely,

G. D. Hicks
Manager — Regulatory Affairs
Brunswick Nuclear Plant

WRM/wrm

Enclosures
1. Response to NRC Questions
2. List of Regulatory Commitments

cc: Mr. S. D. Ebneter, Regional Administrator, Region II
Mr. D. C. Trimble, Jr., NRR Project Manager - Brunswick Units 1 and 2
Mr. C. A. Patterson, NRC Senior Resident Inspector - Brunswick Units 1 and 2
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

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ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324
LICENSE NO. DPR-62
NUREG-0619 INSPECTIONS OF FEEDWATER NOZZLES AND SPARGERS

DISCUSSION

By letter dated August 17, 1995 (Serial No. BSEP 95-0094), Carolina Power & Light Company (CP&L) advised the Nuclear Regulatory Commission (NRC) of the Company's revised plan for replacement of the Brunswick Steam Electric Plant, Unit No. 2 feedwater spargers. Specifically, CP&L indicated that the Company no longer plans to replace the Unit 2 feedwater spargers. Instead, CP&L indicated its intent to continue to perform feedwater sparger examinations in accordance with the examination schedule contained in NUREG-0619 using an alternate examination method (e.g., a visual inspection by high resolution remote camera) as previously discussed with and accepted by the NRC.

Subsequently, by letter dated October 9, 1995 (Serial No. BSEP 95-0459), CP&L requested NRC concurrence with deferral of NUREG-0619 feedwater nozzle liquid penetrant (LP) examinations that were scheduled to be performed during the Unit 2 Refueling Outage 11. The deferral is being requested due to the hardship posed by personnel radiation exposure that would be incurred by performance of the LP examinations (estimated to be approximately 5.3 man-rem) and to allow time to complete development, qualification, and obtain NRC approval of an ultrasonic inspection technique for use during future Brunswick refueling outages. At the request of the NRC staff, CP&L submitted by letter dated November 14, 1995 (Serial No. BSEP 95-0563) a copy of the Structural Integrity Associates Report SIR-93-037 referenced in the October 9, 1995 letter.

On November 30, 1995, a telephone conference was held between CP&L and members of the NRC Staff to discuss the above referenced CP&L submittals. During the telephone conference, the NRC representatives requested that CP&L provide a written response addressing the items identified below:

NRC Item 1: Identify which feedwater sparger receives return flow from the Reactor Water Clean-up System.

CP&L Response 1:

Reactor Water Clean-up System return flow is distributed to the feedwater spargers located at the 225 degree and the 315 degree locations.

NRC Item 2: Will CP&L perform a visual inspection of the feedwater nozzle inner blend radii during the upcoming Unit 2 refueling outage?

CP&L Response 2:

Carolina Power & Light Company will perform a visual inspection of the Unit 2 feedwater nozzle inner blend radii during the upcoming Unit 2 refueling outage (B212R1) that is scheduled to begin on February 2, 1996.

NRC Item 3: Due to the existence of previous identified circumferential weld cracking in the feedwater sparger junction box, does CP&L plan to perform a visual inspection of the feedwater sparger flow holes and the sparger junction box circumferential welds during the upcoming refueling outage and each subsequent refueling outage?

CP&L Response 3:

The Company has performed extensive inspections of the feedwater spargers and nozzle blend radius in accordance with NUREG-0619 since 1982 when the initial liquid penetrant inspections identified cracking in the flow holes. During Unit 2 Refueling Outage 7 (B208R1) inspections in 1988, a crack extending from a flow hole was observed that was turning into the heat affected zone of a circumferential weld on the 225 degree junction box. During Unit 2 Refueling Outage 8 (B209R1) in 1989/1990, Carolina Power & Light Company again performed liquid penetrant inspection of the flow holes and sparger junction box circumferential welds. During these inspections, the crack on the 225 degree sparger circumferential weld exhibited no significant growth. An indication was also found in the heat affected zone of a circumferential weld on the 135 degree sparger. The results of the B209R1 inspections were submitted to the NRC in a letter dated September 14, 1990 (Serial No. NLS-90-183).

During Unit 2 Refueling Outage 9 (B210R1) in 1991, liquid penetrant inspections were again performed on the sparger flow holes and junction box circumferential welds. Additionally, ultrasonic inspections were performed on the junction box circumferential welds. Indications were identified on circumferential welds on the 45, 135, and 225 degree sparger junction boxes. The B210R1 inspection results were reported to the NRC in letters dated June 8, 1992 (Serial No. NLS-92-134) and July 27, 1992 (Serial No. NLS-92-194).

The Company again performed follow-up inspections of the circumferential crack during Unit 2 Refueling Outage 10 (B211R1) in 1994 using enhanced underwater visual inspections with equipment and techniques capable of discerning a 0.001 inch diameter wire. No significant growth in the indications previously reported were noted. The B211R1 inspection results were reported to the NRC in a letter dated December 21, 1994 (Serial No. BSEP 94-0520).

To date, CP&L has not observed any significant growth of the circumferential crack indication. As noted in our August 17, 1995 submittal, an analysis has shown that the critical crack size is 14.1 inches on the outside diameter of the sparger pipe and that the largest allowable crack which would reach the critical flaw size in one cycle of operation is 10.9 inches. To date, the longest existing crack found is 2.0 inches in length.

Although no significant growth has been observed in the circumferential weld indication during the three previous inspections, CP&L will plan to visually reinspect using the enhanced visual inspection method the circumferential weld indication during each future Unit 2 refueling outage beginning with the upcoming Unit 2 Refueling Outage 11 (B212R1). If no significant change in the circumferential weld indication is observed during the upcoming Unit 2 refueling outage, then

CP&L may wish to revise the reinspection frequency for this indication to once every two refueling outages and will consult with the NRC Staff prior to revising this reinspection schedule.

NRC Item 4: Describe any ultrasonic testing (UT) inspections that are planned for the feedwater nozzles during the upcoming Unit 2 refueling outage.

CP&L Response:

The feedwater nozzle blend radii will be ultrasonically (UT) inspected during Unit 2 Refueling Outage 11 (B212R1) using the General Electric GERIS 2000 system. The GERIS 2000 system is a state-of-the-art electronic system that captures the entire ultrasonic RF wave form on "write once" optical discs. The system collects data on 16 channels in very small scan increments enabling analysis of very small indications. Qualification of the inspection equipment and technique was demonstrated at the General Electric facilities near Huntersville, North Carolina on December 5-6, 1995 and was witnessed by Messrs. Blake and Naujock of the NRC staff.

Summary:

Deferral of NUREG-0619 feedwater nozzle LP examinations scheduled for the Unit 2 Refueling Outage 11 will allow time to develop, qualify, and obtain NRC approval of an ultrasonic inspection technique for the feedwater nozzles. As noted in our December 21, 1994 letter (Serial No. BSEP 94-0520), a new digital feedwater control system was installed on Unit 2 during Refueling Outage 10. The new feedwater control system has provided improved stability in feedwater control and has reduced the number of feedwater flow fluctuations during low power operation. Based on the current condition of the Unit 2 feedwater spargers, as well as the benefits being realized from the installation of the new digital feedwater control system, CP&L believes the requested deferral of the feedwater nozzle LP inspections is reasonable and that the continued integrity of the Unit 2 feedwater spargers and nozzles will be maintained. The results of future feedwater sparger and nozzle examinations will continue to be reported to the NRC in accordance with the guidance of NUREG-0619. Based on the results of future inspections, CP&L will continue to ensure the integrity of the Unit 2 feedwater spargers.

ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
NRC DOCKET NOS. 50-325 AND 50-324
OPERATING LICENSE NOS. DPR-71 AND DPR-62
NUREG-0619 INSPECTIONS OF FEEDWATER NOZZLES AND SPARGERS

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

	Commitment	Committed date or outage
1.	If the Company determines, through these future examinations, that the condition of the feedwater sparger circumferential welds and/or flow holes has deteriorated significantly, CP&L will re-evaluate the decision to not repair or replace the Unit 2 feedwater spargers.	N/A
2.	Carolina Power & Light Company will perform an enhanced visual reinspection of the Unit 2 feedwater nozzle inner blend radii during each refueling outage beginning with the 1996 Unit 2 refueling outage (B212R1).	B212R1
3.	CP&L will consult with the NRC Staff prior to revising this reinspection schedule for the feedwater sparger junction box circumferential weld indication.	N/A