CP&L

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SERIAL: BSEP 95-0445

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

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO.50-324/LICENSE NOS. DPR-62
REVISED PLANS FOR CORE SPRAY SYSTEM INSPECTION AND REPAIR ACTIVITIES
NRC BULLETIN 80-13

Gentlemen:

The purpose of this letter is to (1) inform the Nuclear Regulatory Commission (NRC) of a revision in the schedule for completion of the Brunswick Steam Electric Plant Unit 2 core spray system sparger repair bracket seal weld application and deletion of plans to perform liquid penetrant examination of the repair bracket welds, and (2) request NRC concurrence with elimination of inspections of in-vessel core spray system piping other than weld heat affected zones (HAZs) and the spargers. The bases for these changes are provided in Enclosure 1. A list of the regulatory commitments contained in this submittal is provided in Enclosure 2.

Carolina Power & Light Company requests that by December 31, 1995 the NRC provide concurrence with the plan to eliminate inspections of in-vessel core spray system piping other than weld heat affected zones (HAZs) and the spargers in order that planning for the upcoming Unit 2 Reload 11 (B212R1) outage may proceed with this consideration. The B212R1 outage is presently scheduled to begin on February 2, 1996.

Carolina Power & Light Company considers the request involving the elimination of in-vessel core spray system piping inspections other than weld heat affected zones (HAZs) and the spargers to be a cost beneficial licensing action for the Brunswick Plant with anticipated savings in excess of $130,000 for Unit 2.

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

Sincerely,

William R. Campbell

William R. Campbell

WRM/wrm

Enclosures

A011

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

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324/LICENSE NO. DPR-62
REVISED PLANS FOR CORE SPRAY SYSTEM INSPECTION AND REPAIR ACTIVITIES
NRC BULLETIN 80-13

INTRODUCTION

Between late 1978 and early 1980, The Oyster Creek and Pilgrim Plants informed the Nuclear Regulatory Commission (NRC) that cracks had been found in core spray spargers. In early 1979, General Electric Company requested that boiling water reactor licensees inspect the core spray spargers for visual indications of cracking. Subsequently, the NRC issued IE Bulletin 80-13 on May 12, 1980 to require more extensive inspection of core spray spargers. Under Bulletin 80-13, licensees are requested to visually examine the core spray spargers and the segment of piping between the inlet nozzle and the vessel shroud during each refueling outage.

Since issuance of NRC Bulletin 80-13, Carolina Power & Light Company (CP&L) has performed inspections of the in-vessel core spray system piping and spargers during each scheduled refueling outage of the Brunswick Steam Electric Plant, Units 1 and 2. The purpose of this letter is to request NRC concurrence with elimination of inspections of in-vessel core spray system piping other than weld heat affected zones (HAZs) and the spargers. In addition, this letter is intended to inform the NRC of a revision to the schedule for completion of the Unit 2 core spray system sparger repair bracket seal weld application and deletion of plans to perform liquid penetrant examination of the repair bracket welds.

CORE SPRAY PIPING AND WELD INSPECTION

Background:

Action 1 of NRC Bulletin 80-13 specified that all operating boiling water power reactor facilities should perform a visual inspection of the core spray spargers and the segment of piping between the inlet nozzle and the vessel shroud. These inspections were to begin at the next scheduled refueling outage and were to continue for each following refueling outage until further notice.

Since issuance of IE Bulletin 80-13, the Brunswick Plant has performed a combined total of fourteen inspections of the vessel internal core spray spargers and piping for Unit 1 and Unit 2. While cracking has been identified during these inspections in weld heat affected zones (HAZ) of the in-vessel core spray piping, no indications have been observed in other portions of the system piping.

Proposed Action:

Carolina Power & Light Company is proposing that piping be eliminated from the scope of the IE Bulletin 80-13 inspections performed during future Brunswick Unit 1 and Unit 2 refueling outages. Welds and the adjacent HAZ would continue to be inspected each outage. Brunswick Plant experience has shown that no cracking has occurred to date in non-welded areas of the vessel internal core spray piping system. NUREG-0313 acknowledges that sensitization from

- welding is a significant contributor to intergranular stress corrosion cracking (IGSCC); therefore, non-sensitized piping is not considered susceptible to IGSCC. Because the portion of the core spray piping other than the weld HAZ is not susceptible to IGSCC, this reduction of inspection scope will not adversely impact the safety of the vessel internal core spray piping system.

Significant manpower is expended on these inspections with current inspections taking approximately 24 hours to complete. Reducing the scope to the proposed areas would reduce the inspection time to approximately one-half (i.e., approximately 12 hours of critical path outage time). Accordingly, CP&L considers this request to be a cost beneficial licensing action for the Brunswick Plant with anticipated savings in excess of $130,000 for the plant; therefore, CP&L requests that this request be given appropriate review priority.

CORE SPRAY PIPING REPAIR BRACKET

Background:

In a letter dated November 27, 1991 (Serial No. NLS-91-303), CP&L provided the results of visual examinations of the in-vessel core spray piping and spargers for Unit 2, performed during the Reload 9 outage (B210R1). This submittal also described repairs of a crack indication on the north core spray line.

The crack indication on the north core spray line was repaired during the B210R1 outage by reinforcing the piping using underwater welding techniques to weld a bracket assembly to the core spray piping. The bracket assembly covers the cracked tee-box location and consists of an upper and lower bracket welded across the piping arms and tee-box. The brackets provide full structural integrity of the piping, even if the crack indication were to grow to 360 degrees of circumference. The bracket and weld filler materials (316L stainless steel) are resistant to intergranular stress corrosion cracking (IGSCC). The underwater welding of the bracket was performed in accordance with the guidance of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI and the American Welding Society Specification for Underwater Welding, ANSI/AWS D3.6-89. In a Safety Evaluation dated January 14, 1994, the NRC concluded that this modification would maintain full structural integrity and support continued operability of the core spray line. The repair was also discussed in NRC Inspection Reports 50-325/91-32 and 50-324/91-32 dated December 4, 1991.

Following the repair, a remote visual examination of the bracket welds was performed which assured the welds to be of acceptable quality for at least one cycle of operation. Since a vessel drain down was not performed, a liquid penetrant (LP) examination of the bracket welds could not be performed. In the November 27, 1991 submittal, CP&L committed to (1) perform an LP examination of the bracket assembly welds and (2) apply seal welds to the open ends of the bracket assemblies during the next Unit 2 refueling outage (B211R1) to eliminate the potential for crevice corrosion cracking.

Subsequently, in a letter dated February 8, 1994 (Serial No. BSEP 94-0042), CP&L notified the NRC that the LP examination of the bracket assembly welds and application of seal welds to the bracket assemblies were being deferred to the Unit 2 Reload 11 outage (B212R1). The NRC documented its concurrence with CP&L's revised plans in a letter dated April 7, 1994. Inspection results obtained during the B211R1 outage were subsequently provided in a letter dated July 26, 1994 (Serial No. BSEP 95-0285).

Proposed Action:

Carolina Power & Light Company is deferring seal welding of the open ends of the brackets until the Unit 2 Reload 12 (B213R1) outage, which is scheduled to begin in September 1997. The Company has assessed the deferral of the application of seal welds and found it to be acceptable for an additional fuel cycle based on the following:

1. The seal welds are intended to eliminate the potential for crevice corrosion cracking development under the bracket. The sealing of the open ends of the brackets is being applied only to preclude the possibility of future cracking of the welds, even though the bracket material and the weld filler material are both resistant to intergranular stress corrosion cracking (IGSCC).

2. Completion of the seal welds during the B212R1 outage would require this work to be completed in conjunction with a reactor vessel drain down. Approximately 16 man-rem of radiation exposure would be received by performing the seal welding with the vessel drained versus performing the seal welding with the reactor vessel flooded (i.e., underwater welding).

3. An underwater welding technique which can be used to perform the seal welding is under development. This underwater welding technique is expected to be available for use during the Unit 2 Reload 12 (B213R1) outage.

4. Not installing the seal welds does not affect the ability of the brackets to provide full structural integrity of the core spray piping.

To ensure continued acceptability of the core spray line bracket repair, CP&L plans to perform a remote enhanced visual examination (0.5 mil wire resolution) of the core spray bracket assembly welds in lieu of the LP examination during the upcoming B212R1 outage. Carolina Power & Light Company received similar approval in a Safety Evaluation dated January 14, 1994 regarding plans to re-examine the feedwater spargers using an underwater high resolution remote operated camera rather than LP or ultrasonic examination.

Carolina Power & Light Company intends to perform examinations of the Unit 2 core spray system piping repair in accordance with the following schedule.

Unit 2 Core Spray Pipe Repair Examination Schedule		
	B212R1 Outage	B213R1 Outage
Bracket Assembly Welds	Remote Enhanced Visual	Remote Enhanced Visual
Circumferential Cracked Weld	Remote Visual	None

CONCLUSIONS:

Carolina Power & Light Company is deferring seal welding of the core spray piping repair bracket open ends until the B213R1 outage. Carolina Power & Light Company expects to complete the seal welding during the B213R1 outage using an underwater welding technique.

- Subsequent to the B213R1 outage, the bracket assembly welds will be visually inspected every refueling outage as committed to in CP&L's November 27, 1991 submittal. Carolina Power & Light Company has no plans to perform LP inspections of the bracket assembly welds. Since the bracket assembly provides full structural integrity of the piping, CP&L will discontinue visual examination of the circumferential cracked weld after the B213R1 outage.

REFERENCES:

1. NRC Bulletin 80-13 dated May 12, 1980, "Cracking In Core Spray Spargers."

2. Letter from L. I. Loflin (CP&L) to NRC Document Control Desk dated December 4, 1989, "IE Bulletin 80-13, Examination of Core Spray System Spargers," Serial No. NLS-89-315.

3. Letter from L. I. Loflin (CP&L) to NRC Document Control Desk dated February 23, 1990, "Response to IE Bulletin 80-13, Examination of Core Spray System Spargers," Serial No. NLS-90-048.

4. Letter from L. I. Loflin (CP&L) to NRC Document Control Desk dated October 30, 1990, "Core Spray Sparger Inspection results (NRC TAC No. 76068)," Serial No. NLS-90-224.

5. Letter from Ngoc B. Le (NRC) to Lynn W. Eury (CP&L) dated June 5, 1991, "Review of the Carolina Power & Light Company's Report On Growth of Crack Indications On The North Core Spray Lines - Brunswick Steam Plant, Unit 2 (TAC No. 76068)."

6. Letter from S. D. Floyd (CP&L) to NRC Document Control Desk dated September 13, 1991, "In-Vessel Core Spray Piping Repair," Serial No. NLS-91-223.

7. Letter from G. E. Vaughn (CP&L) to NRC Document Control Desk dated November 27, 1991, "Response To Bulletin 80-13, Examination of Core Spray System Spargers," Serial No. NLS-91-303.

8. NRC Inspection Report 50-325/91-32 and 50-324/91-32 dated December 4, 1991.

9. Letter from R. A. Anderson (CP&L) to NRC Document Control Desk dated February 8, 1994, "Deferral of Liquid Penetrant Examination of Unit 2 Core Spray System Sparger Bracket Assembly Welds and Application of Bracket Seal Welds," Serial No. BSEP-94-0042.

10. Letter from Patrick D. Milano (NRC) to R. A. Anderson (CP&L) dated April 7, 1994, "Deferral of Liquid Penetrant Examination and Fabrication of Seal Welds on Core Spray Sparger Brackets - Brunswick Steam Electric plant, Unit 2 (TAC No. M81694)."

11. Letter from R. P. Lopriore (CP&L) to Stewart D. Ebneter (NRC) dated May 10, 1994, Serial No. BSEP-94-0178.

12. Letter from R. P. Lopriore (CP&L) to Stewart D. Ebneter (NRC) dated July 26, 1994, "Response To IE Bulletin 80-13, Inspection Results of Brunswick Unit 2 Core Spray Spargers," Serial No. BSEP-94-0285.

13. Letter from Patrick D. Milano (NRC) to R. A. Anderson dated January 14, 1994, "Examination and Evaluation of Core Spray Sparger and Piping Cracks - Brunswick Steam Electric Plant, Units 1 and 2 (TAC No. M81694)."

ENCLOSURE 2

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-324/LICENSE NO. DPR-62
DEFERRAL OF LIQUID PENETRANT EXAMINATION OF UNIT 2
CORE SPRAY SYSTEM SPARGER BRACKET ASSEMBLY WELDS AND
APPLICATION OF BRACKET SEAL WELDS

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.	Conduct remote visual inspection of the Unit 2 north loop core spray circumferential cracked weld.	B212R1
2.	Conduct enhanced remote visual (0.5 mil wire resolution) inspection of the Unit 2 north loop core spray bracket assembly welds.	B212R1
3.	Complete seal welding of the open ends of the Unit 2 north loop core spray brackets.	B213R1
4.	Conduct enhanced remote visual (0.5 mil wire resolution) inspection of the Unit 2 north loop core spray bracket assembly welds.	B213R1 and each refueling outage thereafter.