CP&L

Brunswick Nuclear Plant
P.O. Box 10429
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August 1, 1994

SERIAL: BSEP 94-0299

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1
DOCKET NO. 50-325 / LICENSE NO. DPR-71
PERFORMANCE OF NONDESTRUCTIVE EXAMINATION OF FEEDWATER
NOZZLES AND SAFE ENDS DURING THE B109R1 REFUELING OUTAGE

Gentlemen:

Pursuant to NUREG-0619, subsection 4.4.3.1(2), Brunswick Steam Electric Plant (BSEP) hereby submits the enclosed information concerning the non-destructive examination of the feedwater nozzles and safe ends performed during the BSEP Unit 1 refuel outage no. 8 which is designated as the B109R1 refueling outage.

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

Very truly yours,

R. P. Lopriore
Manager
Regulatory Affairs Section

SHC/shc (fdwtrspr.b1)

Enclosure

Attachment

cc: Mr. S. D. Ebneter, NRC Region II - Regional Administrator
Mr. P. D. Milano, NRC/NRR Senior Project Manager - Brunswick
Mr. C. A. Patterson, NRC Senior Resident Inspector - Brunswick
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

A001 1/1

ENCLOSURE 1

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1
NRC DOCKET NO. 50-325
OPERATING LICENSE NO. DPR-71
UNIT 1 NONDESTRUCTIVE EXAMINATION RESULTS
FEEDWATER NOZZLES AND SAFE ENDS

The following information is provided in accordance with NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," and pertains to the nondestructive examination (NDE) of feedwater nozzles, safe ends and spargers performed at the Brunswick Steam Electric Plant, Unit 1 during the B109R1 refueling outage. Feedwater nozzles and safe ends were not required to be examined this outage per NUREG-0619. Therefore, this report summarizes the inspection of only the feedwater spargers.

I. START-UP/SHUTDOWN CYCLES EXPERIENCED

Brunswick Unit 1 has experienced 138 start-up/shutdown cycles since initial start-up. This quantity includes 9 start-up/shutdown cycles since the previous inspection (B108R1).

II. NONDESTRUCTIVE EXAMINATION RESULTS

The attached relevant portions of the Engineering Evaluation Report (EER) 93-0462 provides a summary of the examination results for the feedwater sparger examinations conducted at the Brunswick Plant, Unit 1 during the B109R1 refueling outage. Table 1 of the EER summarizes the non-destructive examination results of the eight circumferential welds connecting the sparger arms to the tees. The cracks grow downward following the heat affected zone of the circumferential weld. Figure 1 of the EER shows a sketch of a typical circumferentially oriented crack. A comparison of the Liquid Penetrant (LP) examination results of the 56 flow holes examined show no significant changes during the operating cycle following reload number 7. The flow holes continue to show slow crack growth. No significant new flow hole crack growth was found, and no segments of the spargers have separated from around the flow holes.

An analysis (Reference 3 of the relevant portions of EER 93-0462) of the circumferential weld cracking was previously prepared by General Electric Company (GE). This analysis predicted an IGSCC crack growth rate per operating cycle, for a similar indication, is 3.16". The maximum predicted length of a crack before structural failure would occur was 14.1". The longest existing crack found in Unit 1 was 2.5". Thus, there is a total margin of 11.6" of additional crack growth before structural failure of the joint is predicted.

Based upon the GE analysis the longest Unit 1 flaw would be approximately 5.7" at the end of the next cycle. In addition, the examination of the feedwater sparger flow hole cracking found no significant changes from the previous examinations. Therefore, it is acceptable to operate for an additional cycle with the existing feedwater spargers, because the longest existing crack will not reach critical flaw size by the end of the next operating cycle and the sparger flow hole cracks have exhibited minor crack growth.

III. NONDESTRUCTIVE EXAMINATION METHODS

The NDE methods employed for the examination of the subject components during the B109R1 refueling outage were manual ultrasonic and liquid penetrant testing. Initially, all four feedwater spargers were visually examined for gross defects and missing fragments, then fifty six (56) preselected flow holes and the twelve (12) circumferential welds were LP examined. Based upon the results of the LP examination, weld joints with circumferentially oriented indications on the outside diameter were also ultrasonically examined to determine the extent of indications on the inside diameter. Six of the sparger-arm-to-tee welds had circumferentially oriented LP indications on the outside diameter surface. The longest indication was 2.25" long on the left side of the 135° azimuth tee. It was assumed that all of the outside diameter LP indications represented through-wall cracks. Therefore, these six welds were subsequently UT examined for the entire 360° circumference to determine the indication length on the inside diameter surface. The longest indication on the inside diameter surface was 2.5" long. There were no LP indications on the sparger tee outlet to thermal sleeve welds.

IV. EFFECTS ON PREDICTION OF FUTURE CRACKING TENDENCIES

During this outage a new digital feedwater control system was installed on Brunswick Unit 1. This system will provide improved stability in feedwater flow control, i.e., fewer flow fluctuations during low power operation. Also, the feedwater Startup Level Control Valve (SULCV) was replaced during the Unit 1 Reload 7 outage (B108R1).

V. ON-LINE LEAKAGE MONITORING

No on-line leakage monitoring system for the detection of feedwater leakage past the feedwater thermal sleeves has been installed on Brunswick Plant, Unit 1.

This EER documents the NDE examinations performed on the Unit 1 feedwater spargers during Refuel Outage No. 8; summarizes the results; and provides the justification to use the spargers for another operating cycle. This EER is identified as Quality Classification-Other on Form 1. The spargers are not safety related components as evaluated by EER 85-0182 (Ref 6).

1 HISTORY OF FEEDWATER SPARGER NON-DESTRUCTIVE EXAMINATIONS

1.1 Introduction

1.1.1 Each feedwater sparger has thirty-six (36) side drilled flow holes and three (3) circumferential butt welds. The feedwater sparger tee has a horizontal welded seam which has four flow holes located in it. The other flow holes are located in each sparger arm section which is made of seamless bent pipe. Each sparger arm and the thermal sleeve is welded to the tee with a circumferential butt weld.

The feedwater spargers in Unit 1 continue to experience flow hole cracking. The cracks are basically of two types:

A. Radial cracks in random directions which appear as a "sunburst" pattern centered around the flow hole.

B. Cracks in the welded tee and in the circumferential welds attaching the sparger arms to the tee which follow along the edge of the welded seam on one or both sides of the weld. General Electric reports these cracks to be likely the result of weld residual stresses not fully relieved by solution heat treatment and cold working. These cracks have linked together in the horizontal weld at the 315° sparger tee section in BSEP Unit 2.

The root cause of the cracks around the flow holes is believed to be high-cycle thermal fatigue with IGSCC contributing to crack growth in the cracks following the heat affected zone of the welds. The existing sparger material is 304 SS (as-welded) which is susceptible to IGSCC. The arms are 6" Sch 40 pipe. The tee is a fabricated component equivalent to 6" Sch 40.

The cracks in the flow holes were observed in 1982 (Unit 2) and 1979 (Unit 1) by visual inspection. In 1988 detailed mapping and measurements were accomplished in Unit 2 by liquid penetrant examination of selected flow holes to create a reliable baseline for future reference. LP was performed again during the 1989/1990 Unit 2 outage. The Unit 1 spargers were initially examined by liquid penetrant during Refueling Outage No. 7. Indications were also found in the circumferential tee to sparger arm welds.

The feedwater spargers in both units are currently visually and liquid penetrent examined every refueling outage. Normally, feedwater spargers are examined in conjunction with the periodic Nureg 0619 (Ref. 1) examinations, however, the spargers at BSEP are the original spargers (since commercial start-up) and due to the extent of the flow hole and circumferential cracking, the sparger flow holes are liquid penetrant examined every outage to monitor the crack growth. Prior to Refuel Outage No. 8, the twelve (12) circumferential welds had not been LP examined for their entire length. In RF 7, only a portion of each circumferential weld adjacent to the respective flow holes had been examined by LP. In Refuel Outage No. 8, the complete outside diameter of each weld was LP examined and weld joints with relevant indications were also UT examined to determine the length of the cracks.

1.2 Inspection Scope - Unit 1 Refuel Outage No. 8

Initially all four feedwater spargers were visually examined for gross defects and missing fragments, then fifty six (56) preselected flow holes and the twelve (12) circumferential welds were liquid penetrant (LP) examined. Based upon the results of the LP examination, weld joints with circumferentially oriented indications on the outside diameter (OD) were also ultrasonically examined to determine the extent of indications on the inside diameter.

2 EVALUATION OF REFUEL NO. 8 EXAMINATION RESULTS

2.1 Inspection Results

2.1.1 Based upon the LP examination results, six (6) of the sparger arm-to-tee welds were subsequently ultrasonically examined to determine the inside diameter length of the circumferentially oriented outside diameter LP indications. The examination results are provided in Ref. 4.

2.2 Circumferential Welds Inspection Results

2.2.1 Table 1 summarizes the non-destructive examination results of the eight welds connecting the sparger arms to the tee. Six of the sparger-arm-to-tee welds had circumferentially oriented LP indications on the outside diameter surface. The longest indication was 2.25" long on the left side of the 135° azimuth tee. Based upon the previous Unit 2 examination, it was assumed that all of the outside diameter LP indications represented through-wall cracks; therefore, these six welds were subsequently UT examined for the entire 360° circumference to determine the indication length on the inside diameter surface. The longest indication on the inside diameter surface was also the left side of the 135° azimuth tee and was 2.5" long. There were no LP indications on the sparger tee outlet to thermal sleeve welds.

Nozzle Azimuth	Tee-to-Arm Weld	Length of Indication on O.D.	Length of Indication on I.D.
45°	Left	1.25	1.5
	Right	none found	not UT examined
135°	Left	2.25	2.5
	Right	2.0	2.3
225°	Left	1.8	2.1
	Right	2.0	2.25
315°	Left	2.1	2.25
	Right	none found	not UT examined

Table 1. Summary of Circumferentially Oriented Indications

Figure 1 shows the orientation of the circumferential cracking, which is the same as in the previously examined Unit 2, i.e., all of the cracks are on the flow hole side of the sparger. The cracks are growing downward following the heat affected zone of the circumferential weld.

2.3 Flow Holes Inspection Results

2.3.1 A comparison of the LP examination results (Ref. 2) from the previous outage show no significant changes during the operating cycle following reload number no. 7. The photographs from the previous LP examination were compared to the video of this examination. The flow holes continue to show slow crack growth. No significant new flow hole crack growth was found, and no segments of the spargers have separated from around the flow holes.

3 DISPOSITION OF UNIT 1 SPARGERS

3.1 Circumferential Welds

3.1.1 An analysis (Ref. 3) of the circumferential weld cracking was previously prepared by General Electric Company. This analysis was performed to identify allowable conditions for continued operation for another cycle. The analysis concluded that the maximum allowable length of an existing circumferentially oriented crack to permit operation for one additional cycle was 10.9 inches, i.e., this is the longest allowable crack which would reach critical flaw size in one cycle of operation when additional IGSCC crack growth is considered for the cycle. (The IGSCC crack growth rate predicted by GE in Ref. 3 is 3.16" per operating cycle for a similar indication. The maximum predicted length of a crack before structural failure would occur was 14.1".) The longest existing crack found in Unit 1 was 2.5 inches, thus, there is a total margin of 11.6" of additional crack growth (14.1" minus 2.5") before structural failure of the joint is predicted. Based upon Ref. 3, the longest Unit 1 flaw would be approximately 5.7" (2.5" plus 3.2") at the end of the next cycle. It is therefore acceptable to operate for an additional cycle with the existing feedwater spargers. The longest existing crack will not reach critial flaw size in the next operating cycle.

3.2 Flow Holes

3.2.1 There are no significant changes from the previous examinations, therefore, it is acceptable to operate for an additional cycle with the existing flow hole cracking found in Refuel Outage No. 8. Any potential loose fragments of the spargers would be very small and the consequences of this has been previously analyzed for Unit 1 in Ref. 5.

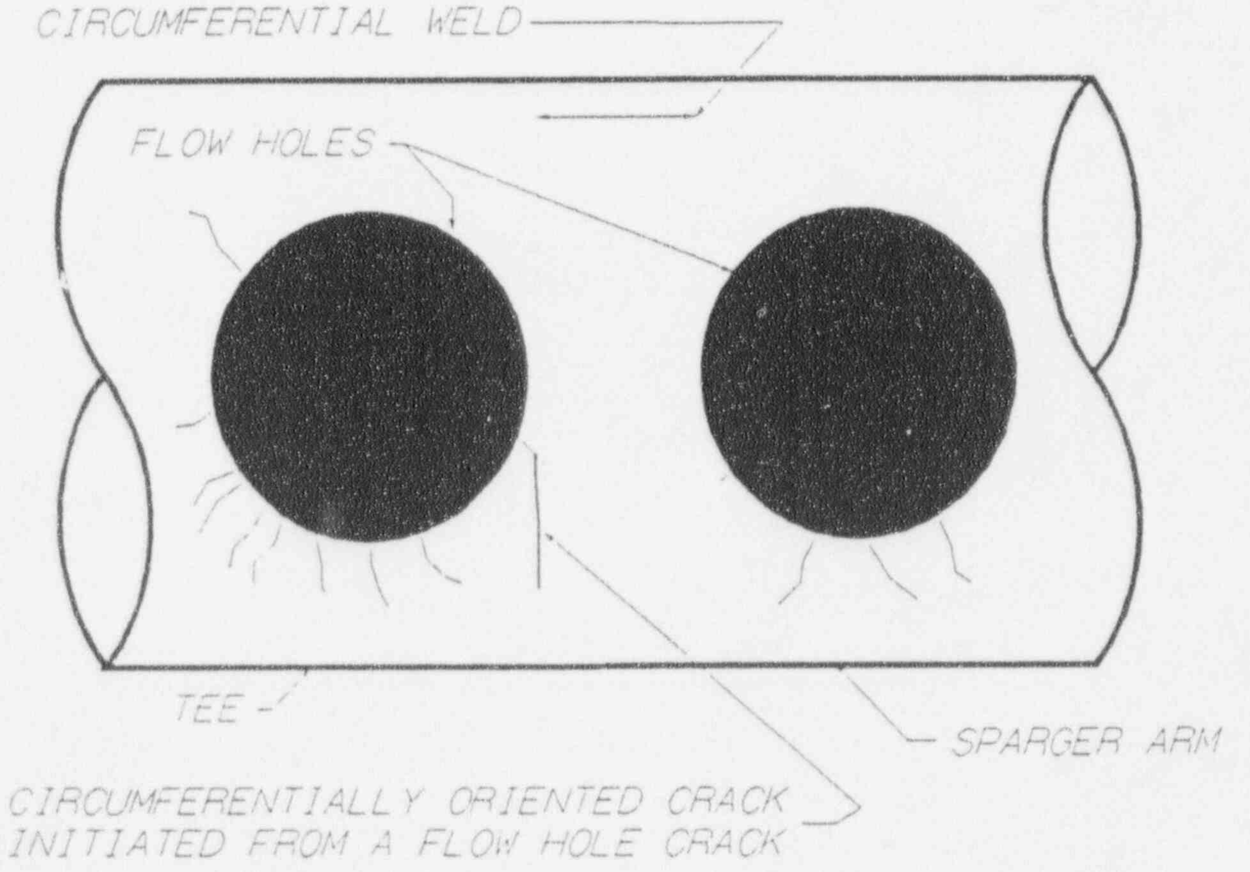

Figure 1 - Typical Circumferentially Oriented Crack

REFERENCES

1. Nureg 0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking".

2. General Electric Company Report No. R-052, Dated 1-17-91.

3. General Electric Company Report No. GE-NE-523-112-1191; DRF 137-0010, dated November, 1991, "Feedwater Sparger Circumferential Cracking Evaluation for Brunswick Units 1 and 2". (Submitted to USNRC as Enclosure 2 to letter No. NLS-92-134, dated 6/08/92.)

4. General Electric Company Report No. BNP1-RFO-B109, IVV Inspection Report and Video Review

5. General Electric Company Evaluation No. RDE-46-1290, "BSEP Unit 1 Feedwater Sparger Crack Growth Assessment", December, 1990.

6. CP&L Engineering Evaluation EER 85-0182.

SAFETY REVIEW COVER SHEET

DOCUMENT NO. EER 93-0462 REV. NO. 0

DESCRIPTION OF TITLE: Evaluation of Unit 1 Feedwater Spargers

1 Assigned Responsibilities:
Safety Analysis Preparer: JAMES GATES
Lead 1st Safety Reviewer: JAMES GATES
2nd Safety Reviewer: ROGER STECKEL

2 Safety Analysis Preparer: Complete PART I, SAFETY ANALYSIS

Safety Analysis Preparer James Gates Date 7/9/93

3 Lead 1st Safety Reviewer: Complete Part II, Item Classification.

4 Lead 1st Safety Reviewer: III may be completed. If either question 1 or 2 is "yes," then Part IV is not required.

5 Lead 1st Safety Reviewer: Determine which DISCIPLINES are required for review of this item (including own) and mark the appropriate blocks below.

DISCIPLINES Required:	(Print Name)	Signature/Date (Step 7)
[ ] Nuclear Plant Operations		
[ ] Nuclear Engineering		
[✓] Mechanical	JAMES GATES	JE Gates 7/9/93
[ ] Electrical		
[ ] Instrumentation & Control		
[ ] Structural		
[✓] Metallurgy	STEVEN K. WILLIAMS	Steven K Williams 7/30/93
[ ] Chemistry/Radiochemistry		
[ ] Health Physics		
[ ] Administrative Controls		

6 A QUALIFIED SAFETY REVIEWER will be assigned for each DISCIPLINE marked in step 5 and his/her name printed in the space provided. Each person shall perform a SAFETY REVIEW and provide input into the Safety Review Package.

7 The Lead 1st Safety Reviewer will assure that a Part III or Part IV is completed (see step 4 above) and a Part VI if required (see 9.b of Part II). Each person listed in step 5 shall sign and date next to his/her name in step 5, indicating completion of a SAFETY REVIEW.

8 2nd Safety Reviewer: Perform a SAFETY REVIEW in accordance with Section 8.0

2nd Safety Reviewer Roger Steckel Date 7/30/93
DISCIPLINE: MECH

9 PNSC review required? If "yes" attach Part V and mark reason below: Yes [ ] No [X]

[ ] Potential UNREVIEWED SAFETY QUESTION
[ ] Question 9 of Part IV answered "Yes"
[ ] Other (specify): ____

PART I: SAFETY ANALYSIS
(See instructions in Section 8.4.1)
(Attach additional sheets as necessary)

DOCUMENT NO. EER 93-0462 REV. NO. 0

DESCRIPTION OF CONDITION/CHANGE: The currently installed feedwater spargers in BSEP Unit 1 have a single row of side drilled flow holes which been developing radial cracks around the flow holes since 1979. The cracks which started growing radially from the sparger flow holes have apparently served as initiatiion points for circumferentially oriented cracks traveling along the heat affected zone of the circumferential sparger-arm-to-tee butt welds. The spargers were non-destructively examined by LP and UT during the current refuel outage to document the extent of the cracking in the circumferential welds and to monitor the continued flow hole crack growth. The spargers are not scheduled to be replaced until the next refueling outage, therefore the EER was written to evaluate the existing condition and provide the justification to use the existing spargers for an additional operating cycle.

ANALYSIS: The spargers are not safety related equipment. The spargers do not perform any safety related function. They are not part of the reactor coolant pressure boundary. The worst case scenarios involving the flow hole cracks and the circumferential weld joint cracks are discussed in the following paragraphs and the conclusion reached by previous analyses bounds the Unit 1 spargers as examined in this refuel outage, i.e., the existing spargers as examined in Refuel Outage No. 8 will be acceptable for one more operating cycle.

Failure of one of the circumferential welds would not affect safe operation of the plant. The sparger end brackets are designed to provide complete support of a sparger arm in the event that an arm separates from the sparger tee[1]. Although RPV instrumentation would not specifically detect a broken sparger, the power distribution of the core would be imbalanced by the uneven feedwater distribution, and the recirculation loop temperatures would change. According to GE, all of these changes would provide indicators to the operator that a problem existed that would likely result in LVW 10/7/93 shutting down the unit. A sparger with a completely separated arm would have no impact on a safe and orderly shutdown and since the sparger is wholly

[1] General Electric says this is one of the design criteria for the sparger pinned end bracket design.

PART I: SAFETY ANALYSIS CONT'D
(See instructions in Section 8.4.1)

DOCUMENT NO. EER 93-0462 REV. NO. 0

contained inside the RPV, there would no impact on the reactor coolant pressure boundary integrity. Therefore, the significant effect would be purely economical, since commercial operation would have to be suspended until the spargers were replaced. Circumferential weld joint failure is the worst case scenario considered for the existing spargers and has been evaluated by General Electric Company for CP&L in Ref 1. The existing circumferential cracks are well within the allowable length evaluated for an additional cycle of operation. The longest existing crack found was 2.5 inches long. Per Ref. 1, the maximum calculated allowable length is 10.9 inches to permit an additional cycle of operation. Therefore, the longest existing crack has a margin of 8.4 inches until it reaches the allowable maximum length for continued operation for another cycle and has a margin of 11.6 inches until failure of the joint is predicted. These values are based upon crack growth rates for IGSCC. Irradiation assisted stress corrosion cracking (IASCC) is not considered a factor in the sparger crack growth because the fluence at the feedwater sparger locations is not sufficient to cause IASCC to dominate IGSCC growth rate. Several engineering estimates have been made for the integrated fluence for the design power operating life in areas much closer to the reactor core than the feedwater spargers. All of these estimates are based upon conservative inputs and all fall well below high stress conditions cited in EPRI research.

The sparger flow hole cracking is a known industry condition that has occurred at almost all other BWR's. The potential for small fragments of the sparger to break loose has been previously analyzed in Ref 2. The size of any likely pieces that could break free are not significant and present no hazards to safe plant operation. The worst scenario predicted was that a piece could get lodged in a jet pump inlet mixer nozzle and cause flow erosion and or partially interrupt the reactor coolant flow passing through the jet pump. Since the size of any potential loose parts is so small, any changes to the feedwater distribution would not be significant enough to be detected. The length of the flow cracks are not long enough to jeopardize the structural integrity of the spargers, however, the results of a circumferential failure of the spargers are predicted be the same as previously discussed.

PART I: SAFETY ANALYSIS CONT'D

(See instructions in Section 8.4.1)

DOCUMENT NO. EER 93-0462 REV. NO. 0

Impingement of the cooler temperature feedwater on the RPV through a circumferential crack is a long term scenario that would impact the integrity of the RPV. This is not a concern at this time since the circumferential indications are on the side of the sparger opposite from the RPV shell , i.e., the cracks are on the flow hole side of the spargers.

REFERENCES

(1) *Feedwater Sparger Circumferential Cracking Evaluation for Brunswick Units 1 and 2.*, General Electric Co. Report DRF-137-0010, November 1991. (Submitted to USNRC with letter no. NLS-92-134, CPL to USNRC, dated 6/08/92)

(2) *BSEP Unit 1, Feedwater Sparger Crack Growth Assessment*, General Electric Company Report No. RDE 46-1290, December, 1990

PART II: ITEM CLASSIFICATION

DOCUMENT NO. EER 93-0462 REV. NO. 0

	Yes	No
1 Does this item represent:		
a. A change to the facility as described in the SAFETY ANALYSIS REPORT?	[ ]	[✓]
b. A change to the procedures as described in the SAFETY ANALYSIS REPORT?	[ ]	[✓]
c. A test or experiment not described in the SAFETY ANALYSIS REPORT?	[ ]	[✓]
2 Does this item involve a change to the individual plant Operating License or to its Technical Specifications?	[ ]	[✓]
3 Does this item require a revision to the FSAR?	[ ]	[✓]
4 Does this item involve a change to the Offsite Dose Calculation Manual?	[ ]	[✓]
5 Does this item constitute a change to the Process Control Program?	[ ]	[✓]
6 Does this item involve a major change to a Radwaste Treatment System?	[ ]	[✓]
7 Does this item involve a change to the Technical Specification Equipment List?	[ ]	[✓]
8 Does this item impact the NPDES Permit (all 3 sites) or constitute an "unreviewed environmental question" (SHNPP Environmental Plan Section 3.1) or a "significant environmental impact" (BSEP)?	[ ]	[✓]
9 Does this item involve a change to a previously accepted:		
a. Quality Assurance Program	[ ]	[✓]
b. Security Plan (including Training, Qualification, and Contingency Plans)?	[ ]	[✓]
c. Emergency Plan?	[ ]	[✓]
d. Independent Spent Fuel Storage Installation license? (If yes, refer to Section 8.4.2, "Question 9," for special considerations. Complete Part VI in accordance with Section 8.4.6)	[ ]	[✓]

SEE SECTION 8.4.2 FOR INSTRUCTIONS FOR EACH "YES" ANSWER.

REFERENCES. List FSAR and Technical Specification references used to answer questions 1-9 above. Identify specific reference sections used for any "Yes" answer.

UFSAR Sections 3.0, 4.0, 5.0, 6.0, 7.0, 10.0, and 15.0 and Technical Specifications Sections 3/4.3, 3/4.4, 3/4.5 and associated design bases.

PART III: UNREVIEWED SAFETY QUESTION DETERMINATION SCREEN

DOCUMENT NO. EER 93-0462 REV. NO. 0

	YES	NO
1 Is this change fully addressed by another completed UNREVIEWED SAFETY QUESTION determination? (See Section 7.2.1, 7.2.2.5, and 7.9.1.1)	[ ]	[✓]

REFERENCE DOCUMENT: ____________ REV. ____________

	YES	NO
2 For procedures, is the change a non-intent change which only (check all that apply): (See Section 7.2.2.3)	[ ]	[ ]

[ ] Correct typographical errors which do not alter the meaning or intent of the procedure; or,

[ ] Add or revise steps for clarification (provided they are consistent with the original purpose or applicability of the procedure); or,

[ ] Change the title of an organizational position; or,

[ ] Change names, addresses, or telephone numbers of persons; or,

[ ] Change the designation of an item of equipment where the equipment is the same as the original equipment or is an authorized replacement; or,

[ ] Change a specified tool or instrument to an equivalent substitute; or,

[ ] Change the format of a procedure without altering the meaning, intent, or content; or

[ ] Deletes a part or all of a procedure, the deleted portions of which are wholly covered by approved plant procedures?

If the answer to either Question 1 or Question 2 in PART III is "Yes," then PART IV need not be completed.

PART IV: UNREVIEWED SAFETY QUESTION DETERMINATION

DOCUMENT NO. EER 93-0462 REV. NO. 0

Using the SAFETY ANALYSIS developed for the change, test or experiment, as well as other required references (LICENSING BASIS DOCUMENTATION, Design Drawings, Design Basis Documents, codes, etc.), the preparer of the SAFETY EVALUATION must directly answer each of the following seven questions and make a determination of whether an UNREVIEWED SAFETY QUESTION exists.

A WRITTEN BASIS IS REQUIRED FOR EACH ANSWER

	Yes	No
1 May the proposed activity increase the probability of occurrence of an accident evaluated previously in the SAFETY ANALYSIS REPORT?	[ ]	[✓]

Using the existing spargers in their present condition does not increase the probability of occurrence of any previously evaluated accident. The spargers are not safety related equipment and postulated failure of the existing spargers only affects the commercial operation of the unit.

	Yes	No
2 May the proposed activity increase the consequences of an accident evaluated previously in the SAFETY ANALYSIS REPORT?	[ ]	[✓]

Using the spargers in their present condition does not increase the consequences of any accidents previously evaluated in the UFSAR. Previously evaluated accidents do not consider failure of the spargers since they are not safety related, therefore the consequences of previously evaluated accidents are unchanged.

	Yes	No
3 May the proposed activity increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the SAFETY ANALYSIS REPORT?	[ ]	[✓]

Using the spargers in their present condition does not increase the probability of malfunction of safety related equipment. The postulated failure of the existing spargers does not significantly impact any safety related equipment.

	Yes	No
4 May the proposed activity increase the consequence of a malfunction of equipment important to safety evaluated previously in the SAFETY ANALYSIS REPORT?	[ ]	[✓]

Postulated failure of the spargers would have no impact on any safety related plant equipment, therefore, the consequences of any previously evaluated malfunction would not be increased.

	Yes	No
5 May the proposed activity create the possibility of an accident of a different type than any evaluated previously in the SAFETY ANALYSIS REPORT?	[ ]	[✓]

No, the spargers themselves are not safety related equipment and failure of the spargers in their present condition has been considered and the conclusion is that there is no impact on any safety related equipment, therefore operating with the existing spargers for another cycle does not create the possibility of a different type of accident than has previously been evaluated.

PART IV: UNREVIEWED SAFETY QUESTION DETERMINATION

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6 May the proposed activity create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the SAFETY ANALYSIS REPORT? [ ] [✓]

No, using the existing spargers for another operating cycle does not create the possibility of malfunction of safety related equipment of a different type than previously evaluated. There is no postulated adverse impact on any equipment important to safety. Any segments of the spargers that are postulated to be potential loose parts are too small to have any significant effect on any safety related equipment and the existing circumferential welds cracks are well within the acceptable limit for operation for another cycle.

LVW 8/5/93

7 Does the proposed activity reduce the margin of safety as defined in the basis of any Technical Specification? [ ] [✓]

All margins of safety are unchanged by the continued operation of the non-safety related spargers in their present condition.

8 Based on the answers to questions 1 - 7, does this item result in an UNREVIEWED SAFETY QUESTION? If the answer to any of the questions 1-7 is "Yes", then the item is considered to constitute an UNREVIEWED SAFETY QUESTION. [ ] [✓]

9 Is PNSC review required for any of the following reasons? [ ] [✓]

If, in answering questions 1 or 3 "No", it was determined that the probability increase was small relative to the uncertainties; or, in answering question 2 or 4 "No", it was determined that the doses increased, but that the dose was still less than the NRC ACCEPTANCE LIMIT; or in answering question 7 "No", a parameter would be closer to the NRC ACCEPTANCE LIMIT, but the end result was still within the NRC ACCEPTANCE LIMIT; then PNSC review is required.

REFERENCES: UFSAR Sections 3.0, 4.0, 5.0, 6.0, 7.0, 10.0, and 15.0 and Technical Specifications Sections 3/4.3, 3/4.4, 3/4.5 and associated design bases.

This Unreviewed Safety Question Determination is for the following DISCIPLINE(s): (Additional Part IV forms may be included as appropriate.)

- [ ] Nuclear Plant Operations
- [ ] Nuclear Engineering
- [✓] Mechanical
- [ ] Electrical
- [ ] Instrumentation & Control
- [ ] Structural
- [✓] Metallurgy
- [ ] Chemistry/Radiochemistry
- [ ] Health Physics
- [ ] Administrative Controls

Enclosure
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. None	N/A
2.	
3.	