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ACCESSION NBR: 8506210234 DOC. DATE: 85/06/17 NOTARIZED: NO DOCKET #
 FACIL: 50-000 Generic Docket 05000000
 50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Light 05000261
 50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
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 ZIMMERMAN, S.R. Carolina Power & Light Co.
 RECIP. NAME: RECIPIENT AFFILIATION
 THOMPSON, H.L. Division of Licensing

SUBJECT: Forwards response to Generic Ltr 85-02 re recommended actions for resolution of unresolved safety issues concerning steam generator tube integrity & requests info concerning Category C-2 steam generator tubes insps.

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Carolina Power & Light Company

SERIAL: NLS-85-212

JUN 17 1985

Mr. Hugh L. Thompson, Jr. Director
Division of Licensing
United States Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

SHEARON HARRIS NUCLEAR POWER PLANT
UNIT NO. 1 - DOCKET NO. 50-400

RESOLUTION OF UNRESOLVED SAFETY ISSUES REGARDING
STEAM GENERATOR TUBE INTEGRITY (GENERIC LETTER 85-02)

Dear Mr. Thompson:

Carolina Power & Light Company herewith responds to Generic Letter 85-02 dated April 17, 1985. The attachments to this letter address:

- The Staff recommended actions stemming from NRC integrated program for the resolution of Unresolved Safety Issues regarding steam generator tube integrity (Attachment I), and
- the request for information concerning Category C-2 steam generator tube inspections (Attachment II).

We will submit our comments to NUREG-0844 in the near future.

If you have any questions, please contact Mr. Pedro Salas at (919) 836-8015.

Yours very truly,

S. R. Zimmerman
Manager

Nuclear Licensing Section

SRZ/PS/mf (1619PSA)
Attachments

cc: Dr. J. Nelson Grace (NRC-RII)
Mr. G. Requa (NRC)
Mr. H. Krug (NRC Resident Inspector - RNP)
Mr. B. C. Buckley (NRC)
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ATTACHMENT I

CAROLINA POWER & LIGHT COMPANY RESPONSE TO THE STAFF RECOMMENDED ACTIONS STEMMING FROM NRC INTEGRATED PROGRAM FOR THE RESOLUTION OF UNRESOLVED SAFETY ISSUES REGARDING STEAM GENERATOR TUBE INTEGRITY (GENERIC LETTER 85-02, ENCLOSURE 1)

Issue 1.a - Prevention and Detection of Loose Parts (Inspections)

- H. B. Robinson

CP&L replaced the H. B. Robinson steam generators during 1984. Following a short period of operation, the unit was shut down to perform seismic support work. During the outage, the secondary side in the vicinity of the tube sheet of all three steam generators was inspected. Additional inspections on the secondary side would be performed if foreign objects are suspected as indicated by the installed metal impact monitoring system or steam generator eddy current test results.

Additional inspections, following repair or modification activities, using fiberoptics would be determined on a case by case basis based on the nature and extent of the work performed.

During these inspections, precautions are taken to minimize secondary side corrosion by: (1) minimizing the time the secondary side is open, (2) using bladders/manway covers, and (3) using N₂ purges.

- Shearon Harris

Controls will be in place to prevent and detect loose parts and foreign objects in the steam generator secondary sides. Following work (e.g., maintenance in the secondary side of the steam generators), visual inspections will be performed in the vicinity of the top of the tube sheet in the areas accessible from the sludge lancing ports. These visual inspections will be performed using fiberoptics and mini-TV cameras prior to and after hot functional testing (HFT) and at the first planned outage for eddy current testing.

The steam generators will be inspected in the event that the metal impact monitoring system or eddy current testing results indicate the presence of foreign objects.

Issue 1.b - Prevention and Detection of Loose Parts (Quality Assurance)

Controls are in place to preclude introduction of foreign objects into the steam generator whenever they are opened. Generally, the individuals performing the work are responsible for accountability of materials and cleanliness requirements.

- H. B. Robinson

Secondary side inspections and sludge lance operations are controlled with procedures developed for the specific operation. The procedures contain provisions to account for material used during this operation. For future modifications to the secondary side, should the need arise, similar material accountability controls will be included in the implementing procedure.

Use of channel head nozzle covers prevent foreign objects on the primary side. These covers are typically installed as soon as practicable after the manways are removed. If the nozzle covers are removed a temporary protective cover (screen mesh or diaphragm) is placed over the manway. The primary side is inspected prior to closeout following completion of inspection and repair activities.

- Shearon Harris

Control of materials and cleanliness will be managed by maintenance procedures. The procedures contain provisions to account for material used during the operation.

Use of channel head nozzle covers prevent foreign objects on the primary side. These covers are typically installed as soon as practicable after the manways are removed. If the nozzle covers are removed a temporary protective cover (screen mesh or diaphragm) is placed over the manway. The primary side is inspected prior to closeout following completion of inspection and repair activities.

Issue 2.a - Inservice Inspection Program (Full Length Tube Inspection)

- H. B. Robinson

The recent practice has been to do full length tube inspections. However, due to exposure considerations, except when necessary, these inspections are generally performed from one side (hot leg side). This avoids the exposure associated with the installation of equipment in the other leg. The tubes adjacent to the tube lane are not inspected full length in every case because of the short radius of the U-bend.

- Shearon Harris

When eddy current inspections are performed (using differential inspection techniques), the tubes selected for examination are inspected full length where applicable to obtain a 3% tube sampling. The examinations may use either single or double sided entries.

Issue 2.b - Inservice Inspection Program (Inspection Interval)

- H. B. Robinson

The steam generator inspection intervals are specified in H. B. Robinson Technical Specifications 4.2.1.1, and are consistent with the staff recommendations.

- Shearon Harris

The steam generator inspection intervals will be limited in a manner consistent with Section 4.4.5.3 of the Standard Technical Specifications (STS), and in addition will not extend beyond 72 months.

Issue 3.a - Secondary Water Chemistry Program

- H. B. Robinson

The secondary water chemistry program at Robinson was modified to change from phosphate to All Volatile Treatment (AVT) chemistry control in 1984 coincident with the installation of the new steam generator tube bundles. This program was developed to meet the EPRI-NP-2704, October 1982, guidelines. This program includes procedures which address chemistry limits, individual responsibilities, and corrective actions (including requirements for power reductions and shutdowns). Major secondary water chemistry parameters are trended.

- Shearon Harris

The plant is developing a plant specific guideline manual. The guidelines pertaining to secondary chemistry will be a Harris plant adaptation of EPRI and Westinghouse guidance. The guidelines will describe the parameters to be measured, the chemistry limits, and corrective actions.

Additionally, a procedure is being developed to define the organization and administration of the chemistry program. Plant procedures will also provide for the monitoring, recording, and trending of critical parameters for the control of chemical additives, equipment performance, feedwater purity and steam generator bulk water impurities. The sampling and monitoring will involve both laboratory and continuous in-line analysis. The records and trends of chemical addition, equipment performance, and sample analysis will be maintained.

Issue 3.b - Condenser Inservice Inspection Program

- H. B. Robinson

Control of air and water inleakage to the condenser is considered to be part of the secondary water chemistry program. As part of this program, inspections would be initiated should a secondary water chemistry parameter indicating excessive air or

water leakage approach its action level value. These inspections have included system walkdowns to identify points for air leakage and helium leak detection methods.

The tube sheets in the condenser are of the integral tube sheet design. This design provides an interspace between the secondary side and circulating water side pressurized with demineralized water which makes water leakage almost non-existent. However, should the tube sheet pressurization system indicate a problem with tube-to-tube sheet integrity, an appropriate inspection would be performed.

- Shearon Harris

Control of air and water leakage to the condenser is considered to be a part of the Water Chemistry Program, Plant Performance Procedures (Condenser Leakage Testing), Maintenance Work Control Practices, and Modification Procedure (Procedures for Engineering Evaluation). As part of this program, inspections would be initiated should a secondary water chemistry parameter indicating excessive air or water leakage approach its action level value.

The condenser and the equipment and piping connected to the condenser shell are designed to minimize air leakage. The condenser is provided with integral grooved tube sheets which are filled with condensate maintained at a pressure above circulating water system pressure. Thus, in the event of a tube to tube sheet joint leak, condensate, rather than circulating water, enters the condenser shell.

Item 4 - Primary to Secondary Leakage Limit

- H. B. Robinson

The H. B. Robinson primary to secondary leakage limits are consistent with the staff recommendations. The limits are addressed in H. B. Robinson Technical Specifications 3.1.5.3.

- Shearon Harris

Shearon Harris will utilize the STS limit.

Issue 5 - Coolant Iodine Activity Limit

- H. B. Robinson

H. B. Robinson Technical Specifications 3.1.4 addresses coolant iodine activity and are equivalent to STS, therefore, meeting the staff's recommendations.

- Shearon Harris

Shearon Harris will utilize the STS limit.

Issue 6 - Safety Injection Signal Reset

- H. B. Robinson

H. B. Robinson has separate safety injection and charging pumps. This recommendation is, therefore, not applicable.

- Shearon Harris

This action is not applicable to Shearon Harris. The safety injection pump takes suction from the refueling water storage tank.

ATTACHMENT II

CAROLINA POWER & LIGHT COMPANY REQUEST FOR INFORMATION CONCERNING CATEGORY C-2 STEAM GENERATOR TUBE INSPECTIONS (GENERIC LETTER 85-02, ENCLOSURE 2)

QUESTION 1

What factors do, or would, the licensee or applicant consider in determining

(a) whether additional tubes should be inspected beyond what is required by the Technical Specifications, . . .

- H. B. Robinson

At H. B. Robinson, tubes beyond those required by TS are inspected if the TS tube population does not provide a representative sample based on either previously performed inspections or results of the inspection in progress. The intent is to bound areas of degradation. Additionally, if degraded areas occurred at several locations across the tube sheet, additional tubes may need to be sampled to continue to define the boundaries of these areas, while still representatively sampling unaffected areas.

- Shearon Harris

Tubes will be inspected in accordance with the Technical Specifications (TS) requirements. If the results of the inspection are abnormal compared to previous inspections, additional inspections will be performed until the degraded area is bounded. Additionally, if degraded areas occurred at several locations across the tube sheet, additional tubes may be sampled to continue to define the boundaries of these areas, while still representatively sampling unaffected areas.

(b) whether all steam generators should be included in the inspection program . . .

- H. B. Robinson

Steam generators would be inspected until a worst case steam generator was clearly identified taking into consideration the mechanisms of degradation. Experience has shown that it may take two or even three separate steam generators to properly represent the mechanisms.

- Shearon Harris

Shearon Harris will follow the STS requirements.

(c) , and when the steam generators should be reinspected [?]

- H. B. Robinson

Reinspection intervals more restrictive than TS have been applied utilizing corrosion rate calculations based on the results of two or more inspections.

- Shearon Harris

Shearon Harris will follow the STS requirements, and will be guided by the experience at H. B. Robinson.

QUESTION 2

To what extent do these factors include consideration of the degradation mechanism itself and its potential for causing a tube to be vulnerable to rupture during severe transients or postulated accident before rupture or leakage of that tube occurs during normal operation [?]

- H. B. Robinson

When abnormal degradation occurred in the Robinson steam generators prior to replacement, the steam generator supplier was utilized to help develop the technical

basis for inspection intervals and recommended inspection scope. These, by necessity, included consideration of the degradation, transients, and normal operation. Much of this information was presented to the staff over the course of years, both informally at meetings and formally (docketed).

- Shearon Harris

The factors will be considered to the extent that are considered by STS, and will be guided by the experience at H. B. Robinson.