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Docket No.: 50-348

10 CFR 50.90

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

Joseph M. Farley Nuclear Plant - Unit 1
Response to Voltage-Based Repair Criteria Request for Additional Information

Ladies and Gentlemen:

By letter dated January 27, 1997, the NRC forwarded a seven question request for additional information (RAI) regarding the voltage-based repair criteria for steam generator tubing. Responses to the first six RAI questions are related to approval of the technical specification amendment. Responses to the first six questions are provided in Enclosure 1.

The seventh question addressed issues not directly related to the approval of the technical specification amendment, i.e., use of a fraction of the RPC NDDs and use of a voltage dependent probability of detection in the analyses. However, as directed by Generic Letter 95-05, these issues require NRC Staff approval prior to being used. Although significant resources have been expended in development of the responses to question seven since the RAI was received, additional analysis is still required in order to provide a complete response. Due to the critical nature of the technical specification amendment to support the upcoming Unit 1 outage, insufficient time exists to provide a complete response to question 7. Consequently, Southern Nuclear requests that the proposed technical specification amendment be approved without approval of inclusion of only 50% of the RPC NDDs in the analysis and without approval of the use of a voltage dependent probability of detection. Southern Nuclear will continue to pursue these options in a separate request at a later date in coordination with a similar industry effort lead by NEI and EPRI.

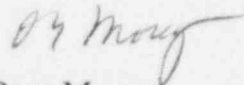
Enclosure 2 provides revised responses to Generic Letter 95-05 guidelines as a result of the request for additional information. Enclosure 3 provides a revised technical specification page as requested by the request for additional information.

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If you have any questions, please advise.

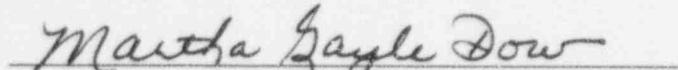
Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Dave Morey

Sworn to and subscribed before me this 6th day of February 1997


Notary Public

My Commission Expires: November 1, 1997

REM/clt:nrcrai.doc

Enclosures:

1. Response to the Request for Additional Information
2. Revised Responses to Generic Letter 95-05
3. Revised Technical Specification Page

cc: Mr. L. A. Reyes, Region II Administrator
Mr. J. I. Zimmerman, NRR Project Manager
Mr. T. M. Ross, Plant Sr. Resident Inspector
Mr. T. A. Reed, NRR - Materials and Chemical Engineering Branch
Dr. D. E. Williamson, State Department of Public Health

ENCLOSURE 1

Responses To The Request For Additional Information
Concerning Review Of Technical Specification Amendment
Regarding Steam Generator Tube Support Plate
Voltage-Based Alternate Repair Criteria
For Joseph M. Farley Unit 1 Nuclear Plant

Responses To The Request For Additional Information Concerning Review Of
Technical Specification Amendment Regarding Steam Generator Tube Support Plate
Voltage-Based Alternate Repair Criteria For Joseph M. Farley Unit 1 Nuclear Plant

1. **NRC Request:** Attachment 1, Page 1, Item (2)

The licensee states that "(T)he inspection guidance discussed in Section 3 of Attachment 1 of the Generic Letter will be implemented in accordance with the Appendix A guidelines last submitted to the NRC by letter dated February 23, 1994...." This statement is acceptable if its intent is to address the inspection technique of eddy current testing as specified in Section 3 of Attachment 1 of Generic Letter (GL) 95-05. Appendix A to the licensee's February 23, 1994, letter gives guidelines for eddy current probe specifications, calibration requirements, data acquisition and analysis criteria. However, Appendix A does not provide guidance for all inspection criteria that are specified in Section 3 of Attachment 1 of GL 95-05. Therefore, the licensee may not satisfy GL 95-05 based on Appendix A. The staff suggests that the licensee modify the first sentence in Item (2) as follows: "The inspection criteria discussed in Section 3 of Attachment 1 of the Generic Letter will be implemented. In addition, the inspection guidance will be implemented in accordance with the Appendix A guidelines last submitted to the NRC by letter dated February 23, 1994...."

Southern Nuclear Response:

The response of concern has been modified to:

The inspection criteria discussed in Section 3 of Attachment 1 of the Generic Letter will be implemented with the following responses/clarifications. In addition, the inspection guidance will be implemented in accordance with the Appendix A guidelines last submitted to the NRC by letter dated February 23, 1994.

The change has been included in the revised responses to Generic Letter 95-05 provided in Enclosure 2.

2. **NRC Request:** Attachment 1, Page 1, Item (2) 3.b.3

Section 3.b.3 of Attachment 1 of GL 95-05 specifies the inspection of dent signals that are greater and less than 5 volts. The licensee has committed to implement the GL guidelines except that the inspection sampling plan will be expanded to intersections with dents less than 5 volts if the detected flaws exceed the structural requirements of Regulatory Guide 1.121. The staff does not believe an inspection sampling plan should be based on an evaluation of the structural requirement of Regulatory Guide 1.121, since this will not ensure that the 40-percent throughwall plugging limit of the technical specifications is satisfied. The structural significance of the flaws near 5 volts should not be a part of the sample selection process. The licensee should expand its inspection sampling plan to include dents less than 5.0 volts if cracking indications are detected. The licensee either needs to modify its commitment in Item 3.b.3 or provide a technical basis to support its proposed inspection sampling plan.

Farley Unit 1 Voltage Based Repair Criteria
Responses to Request for Additional Information

SNC Response:

The response to 3.b.3 will be revised as follows:

All intersections with dent signals greater than 5 volts will be inspected with a motorized rotating coil probe. Any indications found at such intersections with the motorized rotating coil probe will result in repair of the tube. If circumferential cracking or primary water stress corrosion cracking indications are detected, the motorized rotating coil probe sampling plan may be expanded to include dents less than 5 volts.

With this modification, the proposed approach will meet the requirements of Generic Letter 95-05. The change has been included in the revised responses to Generic Letter 95-05 provided in Enclosure 2.

3. **NRC Request:** Attachment 1, Page 2, Item 3.c.4

The licensee states that a minimal number of analysts are used for determination of voltage. The licensee also states that the use of a small group of analysts would minimize the effect of analyst variability on determination of growth rate, resulting in as accurate a prediction for the next operating cycle as possible. How was the analyst variability assessed?

SNC Response:

In the context of this statement, the analyst variability was qualitatively assessed. The logic behind the statement is that analysts, even after proper training, will not always make the same voltage call on the same indication. Some analysts will have a tendency to undercall the voltages. Other analysts will have a tendency to overcall the voltages. In fact, the same analyst may shift from a tendency to undercall to a tendency to overcall in eighteen months between inspections. In order to minimize these variations between analysts and over time, a small number of analysts review the eddy current data from the last inspection and the current inspection in a short time frame in order to develop growth rates at Farley.

4. **NRC Request:** Attachment 1, Page 3, Item 2.a.2

The licensee states that "(T)he upper voltage repair limit will be determined 2 months prior to the outage using the most recently approved NRC database. The database proposed by NEI letter dated September 18, 1996 will be used for the Unit 1 outage." The staff is reviewing the NEI proposed database. Pending the completion of staff review, the licensee needs to specify a database that it will use to perform tube integrity calculations.

Farley Unit 1 Voltage Based Repair Criteria
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SNC Response:

Southern Nuclear will use the database forwarded to the NRC Staff by Duquesne Light Company letter dated March 27, 1996, for the upcoming Farley Unit 1 inspection/evaluation. This is the same database that was used on the Farley Unit 2 inspection/evaluation. Southern Nuclear also requests that the NRC Staff provide a projected schedule of review of the NEI database to allow utilities to make plans for upcoming outages.

5. **NRC Request:** Attachment 1, Page 3, Items (2)2.b and (3)2.a

The licensee states that the probability methodology in the Westinghouse report, WCAP-14277, "SLB Leak Rate and Tube Burst Probability Analysis Methods for ODS/CC at TSP Intersections," January 1995, will be used to support the voltage-based repair criteria. Westinghouse has revised the report and the revised version, Revision 1, was published as a part of submittal for the D. C. Cook nuclear plant in a letter from Indiana Michigan Power to the NRC, subject: Donald C. Cook Nuclear Plant Unit 1 Technical Specification Change Request Steam Generator Tube 2 volt Repair Criteria Request for Additional Information, dated December 20, 1996. The licensee should commit to use WCAP-14277, Revision 1, for the voltage-based repair criteria because the previous version also contains calculational methodologies that the staff has determined to be unacceptable.

SNC Response:

As requested, Southern Nuclear will use Revision 1 of WCAP-14277 for the voltage-based repair criteria for Farley Unit 1. The change has been included in the revised responses to Generic Letter 95-05 provided in Enclosure 2.

6. **NRC Request:** Attachment 2, Revised TS pages

On page B 3/4 4-3a, the side bar on the margin of the page shows that all paragraphs on this page have been revised. However, the licensee did not revise the last paragraph on the page. To avoid confusion, the side bar should not be applied to the last paragraph.

SNC Response:

The technical specification page has been revised to correct the side bar. The page is provided in Enclosure 3.

7. **NRC Request:** Attachment 4

The licensee proposes the following for Farley Units 1 and 2: (1) inclusion in tube integrity calculations of 50% of the non-detectable degradation (NDDs) that are assumed to be subsequently confirmed by rotating pancake coil (RPC); and (2) use of probability of prior cycle detection (POPCD) instead of the current probability of detection of 60%.

Farley Unit 1 Voltage Based Repair Criteria Responses to Request for Additional Information

For the proposed 50% of NDDs approach, the licensee needs to provide (1) an assessment to show that using 50% of the NDDs would maintain the conservatism in projected voltage distribution, the leak rate during a postulated steam line break event, and burst probability at the end of cycle (e.g., comparing the projected burst probability and leakage using the proposed method to the results from the as-found conditions); (2) if the 50% NDD approach were to be implemented, discuss any assessment that would be performed at the end of each plant outage to confirm the adequacy of the approach, and discuss any reporting criteria to be implemented on the assessment; and (3) discuss how the value of 50% was derived. As shown in Table 2-3 in Attachment 4 of the submittal, the percentage of RPC confirmation of NDDs can be as high as 85.7%.

NEI has proposed a generic POPCD approach as discussed in the EPRI report, "Steam Generator Tubing Outside Diameter Stress Corrosion Cracking at Tube Support Plates Database for Alternate Repair Limits," NP-7480-L, Addendum 1, 1996 Database update, November 1996. The staff is reviewing the NEI's POPCD approach and has prepared a request for additional information. The licensee's POPCD approach is the same as NEI's POPCD approach; therefore, the staff's review of NEI's POPCD approach would provide regulatory direction for the licensee's POPCD proposal. Pending the completion of the staff's review of NEI's POPCD approach, the licensee should use the existing probability of detection of 60% as specified in GL 95-05 in its tube integrity calculations. The licensee should clarify its intent with respect to combining the percent of NDDs to be used in the tube integrity calculations and POPCD. If this combination is intended, the basis for its acceptability will need to be provided.

SNC Response:

Although significant resources have been expended in development of the responses to question seven since the RAI was received, additional analysis is still required in order to provide a complete response. Due to the critical nature of the technical specification amendment to support the upcoming Unit 1 outage, insufficient time exists to provide a complete response to question 7. Consequently, Southern Nuclear requests that the proposed technical specification amendment be approved without approval of inclusion of only 50% of the RPC NDDs in the analysis and without approval of the use of a voltage dependent probability of detection. Southern Nuclear will continue to pursue these options in a separate request at a later date in coordination with a similar industry effort lead by NEI and EPRI.

Southern Nuclear will follow Generic Letter 95-05 for probability of detection and RPC NDDs.

ENCLOSURE 2

Revised Responses to Generic Letter 95-05 Guidelines