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June 12, 1997

NRC

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Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
Response to Generic Letter 94-03
Core Shroud Inspection Plan

References: 1. Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors."
2. RBG-40846, "Response to Generic Letter 94-03, River Bend Station - Unit 1/Docket No. 50-458," dated August 24, 1994.

File Nos.: G9.5, G9.33.4

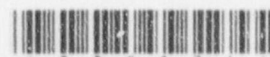
RBF1-97-0200
RBG-43982

Ladies and Gentlemen:

Please find attached the Entergy Operations, Inc. (EOI) response to reporting requirement 2 of Generic Letter (GL) 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors," (Reference 1) for River Bend Station (RBS). In accordance with GL 94-03, this response is being submitted three months prior to performing the core shroud inspections and contains the shroud welds being inspected as well as the examination methods utilized. Plans for evaluation and/or repair based upon inspection results have also been included.

Additionally, in order to correct EOI's response to GL 94-03 in letter RBG-40846 to your office dated August 24, 1994 (Reference 2), it should be noted that welds H1 through H6B and their associated vertical welds were welded using 308 and/or 308L weld filler material. Reference 2 incorrectly states that "welds H1 through H6B and their associated vertical welds were welded with automatic submerged arc welding using ER-308L filler material." This weld filler material difference does not affect the Category B ranking of RBS for shroud inspections.

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This difference was detected after EOI had donated portions of its River Bend Unit 2 shroud to the BWR Vessel and Internals Project (BWRVIP) for analysis.

Should you have any questions or require additional information, please contact Mr. Tim Gates at (504) 381-4866.

Sincerely,

DN LaFing FOR RJK

RJK/RCD/kvm
attachment

cc: U.S. Nuclear Regulatory Commission
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Mr. David L. Wigginton
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**RESPONSE TO REPORTING
REQUIREMENT 2 OF NRC
GENERIC LETTER 94-03**

CORE SHROUD INSPECTION PLAN

BACKGROUND:

In accordance with Reporting Requirement Number 2 of NRC Generic Letter (GL) 94-03, dated July 25, 1994 (Reference 1), and in response to the NRC Safety Evaluation of the Response to GL 94-03 for RBS (Reference 2), the following inspection plan for River Bend Station (RBS) is provided. This plan was developed for implementation during the next refueling outage at RBS (RF07), which is scheduled to begin on September 12, 1997.

The inspection methods, scope, and flaw evaluation criteria of this inspection plan satisfy the recommendations of the Boiling Water Reactor Vessel and Internals Project (BWRVIP), as specified in BWRVIP-01, Rev 2, "BWR Core Shroud Inspection And Flaw Evaluation Guidelines," dated October 1996 (Reference 3).

This inspection plan was developed in response to "Requested Licensee Actions," Number 3, of the GL 94-03. It is based on the ongoing guidance provided by the BWRVIP. The key factors considered in the development of the plan include: hot operating years, materials of fabrication, water chemistry history and current industry experience.

RBS will have approximately 8.7 hot operating years by RF07. In accordance with BWRVIP-01, plants with 304L carbon steel core shrouds, good water chemistry, and ≥ 8 hot operating years would be categorized as a Category B plant and require limited inspections.

SCOPE OF INSPECTION:

The RBS core shroud welds can be divided into four groups:

1. Shroud attachment welds (e.g., LPCI piping)
2. Shroud vertical welds
3. Shroud support structure welds
4. Shroud circumferential welds

The attachment welds, vertical welds, and support structure welds have been excluded from RBS's initial inspection plan. The basis for exclusion of these welds from the initial inspection plan is addressed in Section 3.1 and Appendix A (Vertical Welds) of BWRVIP-01.

For the circumferential welds, RBS plans to follow the BWRVIP-01 Category B inspection recommendations. They include a limited inspection of the core shroud circumferential welds. The limited inspection's scope includes circumferential shroud welds H3, H4, H5 and H7. The H5 weld is the shroud to core plate support ring weld. RBS's shroud to core plate support ring weld is designated H6A due to an additional

shroud barrel weld. Therefore, the welds to be included in RBS's initial shroud inspection plan scope are circumferential welds H3, H4, H6A and H7.

METHOD/EXTENT OF EXAMINATION

The examination method planned for these initial inspections is Ultrasonic Testing (UT) from the outside surface of the shroud. The UT will be performed in accordance with BWRVIP-03, "BWR Vessel and Internals Project Reactor Pressure Vessel and Internals Examination Guidelines," (Reference 4). This method will interrogate the volume of the subject welds and associated heat affected zones for cracking initiating on the inside surface (ID) and the outside surface (OD) of the shroud. The Ultrasonic equipment planned for use in these examinations is General Electric Nuclear Energy's (GENE) SMART system. Scanning will be performed by GENE's OD Tracker and/or a new scanners designed specifically for BWRs. This equipment is designed to maximize the ability to access the shroud welds.

The extent of examination for each of the circumferential welds will vary, depending on the specific weld characteristics (i.e., accessibility relative to invessel components and unexpected interferences) and the ability of the state-of-the-art inspection equipment being utilized. If cracked segments are found, RBS plans to perform additional inspections as established by the BWRVIP.

EVALUATION:

Evaluation of the examination results will be performed in accordance with BWRVIP-01. As recommended by BWRVIP-01, the applicable fluence ranges for the various fracture mechanics procedures are as follows

Limit Load only $\leq 3 \times 10^{20} \text{ n/cm}^2$

LEFM/EPFM w/Limit Load $3 \times 10^{20} < \phi < 1 \times 10^{21} \text{ n/cm}^2$

LEFM w/Limit Load $\geq 1 \times 10^{21} \text{ n/cm}^2$

The need for repairs in RF07 is considered to be very remote, as such no repair plans are in place for RF07. However, should the need for repairs arise, RBS intends to follow the BWRVIP guidelines for repair design and repair plan submittal provided in BWRVIP-02, "BWR Core Shroud Design Criteria," and BWRVIP-04, "Guide for Format and Content of Core Shroud Repair Design Submittals" (References 5 and 6).

INSPECTION/EXAMINATION RESULTS:

In accordance with Reporting Requirement 3 of the GL, RBS will report the results of the RF07 core shroud examinations within 30 days of their completion.

PERIODIC/REINSPECTION PLANS:

The scope and frequency of future core shroud examinations will be performed in accordance with BWRVIP-07, "Guidelines for Reinspection of Core Shrouds" (Reference 7).

REFERENCES:

1. NRC Generic Letter 94-03, Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors, dated July 25, 1994.
2. Safety Evaluation of the Response to GL 94-03 for River Bend Station, Entergy Operations, Inc., Docket No. 50-458, dated February 3, 1995.
3. BWRVIP-01, BWR Core Shroud Inspection and Evaluation Guidelines, Rev. 2, dated October 1996.
4. BWRVIP-03, Reactor Vessel Pressure Vessel and Internals Examination Guidelines, dated October 1995.
5. BWRVIP-02, BWR Core Shroud Repair Design Criteria, dated September 1994.
6. BWRVIP-04, Guide for Format and Content of Core Shroud Repair Design Submittals, dated October 1995.
7. BWRVIP-07, Guidelines for Reinspection of Core Shrouds, dated February 1996.