

September 7, 2001

Mr. Randall K. Edington  
Vice President - Operations  
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River Bend Station  
P. O. Box 220  
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - ENVIRONMENTAL ASSESSMENT AND  
FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT FOR AN  
EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50,  
SECTION 50.60 AND APPENDIX G (TAC NO. MB1114)

Dear Mr. Edington:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for exemption from the requirements of 10 CFR Part 50, Appendix G for the River Bend Station, Unit 1. The application for exemption was contained in your submittal dated January 24, 2001, as supplemented by letters dated July 2, and August 6 and 20, 2001. The proposed exemption permits the use of the methodology contained in the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Code Case N-640 as an alternate reference fracture toughness for reactor vessel materials in determining the pressure-temperature limits.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

**/RA/**

Robert E. Moody, Project Manager, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosure: Environmental Assessment

cc w/encl: See next page

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Dear Mr. Edington:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for exemption from the requirements of 10 CFR Part 50, Appendix G for the River Bend Station, Unit 1. The application for exemption was contained in your submittal dated January 24, 2001, as supplemented by letters dated July 2, and August 6 and 20, 2001. The proposed exemption permits the use of the methodology contained in the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Code Case N-640 as an alternate reference fracture toughness for reactor vessel materials in determining the pressure-temperature limits.

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UNITED STATES NUCLEAR REGULATORY COMMISSION

ENTERGY OPERATIONS, INC.

50-458

RIVER BEND STATION

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the NRC) is considering issuance of an exemption from 10 CFR Part 50, Appendix G for Facility Operating License No. NPF-47, issued to Entergy Operations, Inc. (the licensee), for operation of the River Bend Station, Unit 1 (RBS) located in West Feliciana Parish, Louisiana. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would exempt the licensee from certain provisions of 10 CFR Part 50, Appendix G. Pursuant to 10 CFR Part 50, Appendix G, pressure-temperature limits (P-T) are required to be established for reactor pressure vessels (RPVs) during normal operating and hydrostatic or leak rate testing conditions. Specifically, 10 CFR Part 50, Appendix G, states, "...[t]he appropriate requirements on both the pressure-temperature limits and the minimum permissible temperature must be met for all conditions." Appendix G to 10 CFR Part 50 specifies that the requirements for these limits are the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (the Code), Section XI, Appendix G limits.

The proposed action would substitute ASME Code Case N-640 for specific requirements in 10 CFR Part 50, Appendix G. Code Case N-640, "Alternative Reference Fracture Toughness for Development of P-T Limit Curves Section XI, Division 1," permits the use of an alternative reference fracture toughness ( $K_{Ic}$  fracture toughness curve instead of the  $K_{Ia}$  fracture toughness curve) for RPV materials in determining the P-T limits. Since the  $K_{Ic}$  fracture toughness curve shown in ASME Code Section XI, Appendix A, Figure A-4200-1 provides greater allowable fracture toughness than the corresponding  $K_{Ia}$  fracture toughness curve of ASME Code Section XI, Appendix G, Figure G-2210-1, using the  $K_{Ic}$  fracture toughness, as permitted by Code Case N-640, in establishing the P-T limits would be less conservative than the methodology currently endorsed by 10 CFR Part 50, Appendix G. Considering this, an exemption to apply the Code Case would be required by 10 CFR 50.60. Accordingly, the licensee requested an exemption from the requirements in 10 CFR Part 50, Appendix G.

Use of the  $K_{Ic}$  curve in determining the lower bound fracture toughness in the development of P-T operating limits is more technically correct than the  $K_{Ia}$  curve, since the rate of loading during a heatup or cooldown is slow and is more representative of a static condition than a dynamic condition. The  $K_{Ic}$  curve appropriately implements the use of static initiation fracture toughness behavior to evaluate the controlled heatup and cooldown process relative to an RPV. The ASME Code Section XI, Appendix G, procedure was conservatively developed based on the level of knowledge existing in 1974 concerning RPV materials and the estimated effects of operation. Since 1974, the level of knowledge about these topics has been greatly expanded. The NRC staff concludes that this increased knowledge permits relaxation of the ASME Code Section XI, Appendix G requirements by applying  $K_{Ic}$  fracture toughness, as permitted by Code Case N-640, while maintaining, pursuant to 10 CFR 50.12(a)(2)(ii), the underlying purpose of the ASME Code and the NRC regulations to ensure an acceptable margin of safety.

The proposed action is in accordance with the licensee's application for amendment and exemption dated January 24, 2001, as supplemented by letters dated July 2, and August 6 and 20, 2001, and is needed to support the technical specification (TS) amendment that is contained in the same submittal and is being processed separately. The proposed TS amendment will revise the P-T limits of TS 3.4.11, RCS [Reactor Coolant System] Pressure and Temperature Limits," related to the heatup, cooldown, and inservice test limitations for the RCS to a maximum of 16 Effective Full Power Years (EFPY). The proposed action replaces TS Figure 3.4-11, "Minimum Temperature Required Vs. RCS Pressure," with recalculated RCS P-T limits based, in part, on the alternative methodology in Code Case N-640.

The Need for the Proposed Action:

The revised P-T limits are needed to allow required reactor vessel hydrostatic and leak tests to be performed at a significantly lower temperature. These tests are to be performed during the upcoming refueling outage scheduled to commence in September 2001. The lower temperature for the tests can reduce refueling outage critical path time by reducing or eliminating the heatup time to achieve required test conditions.

Environmental Impacts of the Proposed Action:

The NRC has completed its evaluation of the proposed action and concludes that the exemption and associated license amendment described above would provide an adequate margin of safety against brittle failure of the RBS reactor vessel. The lower temperature, is also safer for test inspectors due to lower ambient drywell temperatures and could result in lower radiological dose due to increased inspection effectiveness at the lower temperature.

The proposed action will not significantly increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released off site, and there is no significant increase in occupational or public radiation exposure.

Therefore, there are no significant radiological environmental impacts associated with the

proposed action.

With regard to potential non-radiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

#### Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

#### Alternative Use of Resources:

This action does not involve the use of any different resource than those previously considered in the "Final Environmental Statement," NUREG-1073, January 1985, for the RBS.

#### Agencies and Persons Consulted:

On August 13, 2001, the staff consulted with the Louisiana State official, Ms. Soumaya Ghosn of the Louisiana Department of Environmental Quality, Radiation Protection Division, regarding the environmental impact of the proposed action. The State official had no comments.

#### FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated

January 24, 2001, as supplemented by letters dated July 2, and August 6 and 20, 2001.

Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland.

Publicly available records will be accessible electronically from the Agencywide Documents Access and Management Systems (ADAMS) Public Library component on the NRC web site, <http://www.nrc.gov> (the Public Electronic Reading Room). If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC PDR Reference staff at 1-800-397-4209, or 301-415-4737, or by e-mail to [pdr@nrc.gov](mailto:pdr@nrc.gov).

Dated at Rockville, Maryland, this 7th day of September 2001.

FOR THE NUCLEAR REGULATORY COMMISSION

***/RA/***

Robert E. Moody, Project Manager, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation