

November 9, 2000

Mr. D. E. Young, Vice President
Carolina Power & Light Company
H. B. Robinson Steam Electric Plant,
Unit No. 2
3581 West Entrance Road
Hartsville, South Carolina 29550

SUBJECT: INSERVICE INSPECTION REQUEST FOR RELIEF FROM ASME CODE,
SECTION XI REQUIREMENTS THIRD 10-YEAR INSPECTION INTERVAL -
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 (HBRSEP2)
(TAC NO. MA9671)

Dear Mr. Young:

By letter dated August 4, 2000, Carolina Power & Light Company (CP&L) submitted a request for relief from the requirements of the American Society of Mechanical Engineers Code (the Code), Section XI, 1986 Edition, regarding visual examination of the reactor coolant pump (RCP) internals for the third 10-year inservice inspection interval for HBRSEP2. CP&L has requested relief from the requirement for visual examination of accessible internal surfaces during disassembly of an RCP unless the pump diffuser adapter is removed. This alternative allows 100-percent accessibility to the internal pressure boundary of an RCP for examination as opposed to less than 20-percent accessibility of the internal surface area with the diffuser adapter in place. The licensee's alternative would allow a more comprehensive visual examination of a pump's internal pressure boundary be conducted once during an inspection interval rather than conducting a lesser examination during disassembly of a pump for routine maintenance as required by the Code, and the proposed alternative would provide reasonable assurance of structural integrity.

The staff concludes that the Code-required VT-3 visual examination of the RCP internal surfaces during RCP disassembly need not be conducted unless the pump diffuser adapter is removed. To require removal of the pump diffuser adapter during each routine disassembly of an RCP for the sole purpose of conducting a Code-required VT-3 examination is considered a hardship without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee's proposed alternative is authorized for the third 10-year inservice inspection interval of HBRSEP2.

- 2 -

Further details regarding the staff's evaluation and conclusions are contained in the enclosed Safety Evaluation.

Sincerely,

/RA/

Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosure: Safety Evaluation

cc w/encl: See next page

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM

REQUEST FOR RELIEF FROM ASME CODE, SECTION XI REQUIREMENTS

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

DOCKET NUMBER 50-261

1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (Code) and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable ASME Code, Section XI, for the third 10-year ISI interval of the H. B. Robinson Steam Electric Plant, Unit 2 (HBRSEP2) is the 1986 Edition.

By letter dated August 4, 2000, Carolina Power & Light Company (CP&L), the licensee for HBRSEP2, submitted a request for relief from the requirements of the ASME Code, Section XI, 1986 Edition, regarding visual examination of the reactor coolant pump (RCP) internals for the third 10-year ISI interval of HBRSEP2. CP&L has requested relief from the requirement of visual examination of accessible internal surfaces during disassembly of an RCP unless the pump diffuser adapter is removed. This alternative allows 100-percent accessibility to the internal pressure boundary of an RCP for examination as opposed to an accessibility of less than 20 percent of the internal surface area with the diffuser adapter in place, when examined during disassembly of an RCP for routine maintenance. Relief is also requested from submitting a report to the NRC demonstrating the safety and serviceability of the pump casing. The staff has evaluated the licensee's request for relief pursuant to 10 CFR 50.55a(a)(3)(ii) for the third 10-year ISI interval of HBRSEP2.

2.0 DISCUSSION

Identification of Components

RCP Internals

Code Requirements

ASME Code, Section XI, 1986 Edition, Table IWB-2500-1, Examination Category B-L-2, Item number B12.20, requires a VT-3 visual examination of one RCP casing internal surface during the 10-year ISI interval. Additionally, HBRSEP2 has incorporated Code Case N-481, "Alternative Examination Requirements for Cast Austenitic Pump Casings" into its third 10-year ISI interval in accordance with Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability-ASME Section XI, Division 1," Revision 12. The Code case requires that a report of the evaluation demonstrating the safety and serviceability of the pump casing be submitted to the NRC.

Relief Requested

Relief is requested to implement alternative requirements to those specified in ASME Section XI Code, 1986 Edition with no Addenda, Table IWB-2500-1, Category B-L-2, Item number B12.20, which is to perform a VT-3 visual examination of the RCP internal pressure-retaining surfaces once per ISI interval.

Relief is also requested from the requirement to submit to the NRC the report of the evaluation demonstrating the safety and serviceability of the pump casing for HBRSEP2, as required by Code Case N-481.

Licensee's Proposed Alternative (as stated)

Relief is requested from performing a VT-3 visual examination of the RCP internal pressure retaining surfaces unless a RCP is disassembled for maintenance, with the pump diffuser adapter removed. If the pump diffuser adapter were removed for maintenance, examination of the internal pressure boundary would include the internal pressure retaining surfaces made accessible by the disassembly. If a VT-3 examination of a RCP internal pressure retaining surfaces is performed, with the pump diffuser adapter removed, during the interval, no additional VT-3 examinations of RCP internal pressure retaining surfaces would be required during the interval.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested for HBRSEP2 on the basis that compliance with the specified requirements of the Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Disassembly of the RCP diffuser adapter for the purpose of performing the VT-3 visual examination of the RCP internal pressure-retaining surfaces would involve significant occupational radiation dose.

3.0 EVALUATION

The licensee's request for relief can be addressed in two parts, the first of which pertains to the VT-3 visual examination of the RCP internal pressure-retaining surfaces. The licensee makes the case that, in spite of a disassembly of an RCP for maintenance, the internal pressure boundary of the pump is inaccessible for the Code visual examination due to obstructions

caused by the RCP diffuser adapter. Therefore, the Code-required examination would invariably require removal of the pump diffuser adapter following disassembly of an RCP during routine maintenance.

The staff notes that the Code requires a VT-3 visual examination of the internal pressure-retaining surfaces whenever a pump is disassembled for maintenance. But due to obstructions caused by the pump diffuser adapter, 80 percent of the internal surfaces are inaccessible for examination, thus precluding a meaningful and comprehensive examination of the pressure-retaining surfaces. Therefore, the licensee must remove the diffuser adapter following disassembly of a pump during routine maintenance to perform a Code-required examination. The staff notes that performance of a VT-3 examination of 20 percent of the surface that is accessible does not provide high levels of assurance of structural integrity and exposes workers to high radiation doses. Removal of the pump diffuser adapter during every RCP disassembly for the sole purpose of a VT-3 visual examination would be a hardship without a compensating increase in the level of quality and safety, since the incremental increase in assurance of structural integrity gained from a VT-3 examination is not commensurate with the level of effort needed to remove and reinstall the diffuser adapter. The staff believes that the licensee's proposed VT-3 visual examination during RCP disassembly, whenever the pump diffuser adapter is removed, would result in a more comprehensive and meaningful examination than an examination performed to the extent practicable during a routine maintenance disassembly, and would reduce unnecessary radiation exposure. The licensee's alternative would allow a more comprehensive visual examination of a pump's internal pressure boundary be conducted once during an inspection interval rather than conducting a lesser examination during disassembly of a pump for routine maintenance as required by the Code, and the proposed alternative would provide reasonable assurance of structural integrity.

The second part of the relief request pertains to relief from submitting a report of the evaluation demonstrating the safety and serviceability of the pump casing, as required under Code Case N-481 "Alternative Examination Requirements for Cast Austenitic Pump Casings." The staff notes that the visual examination and the evaluation demonstrating safety and serviceability will be implemented in the ISI program as an alternative to the Code-required volumetric examination. The results of this alternative examination will, therefore, be reported in the ISI summary report and submitted to the NRC in accordance with the Code. Therefore, a separate submittal of this evaluation to the NRC, as required by Code Case N-481, is not necessary.

4.0 CONCLUSION

The staff concludes that the Code-required VT-3 visual examination of the RCP internal surfaces during RCP disassembly need not be conducted unless the pump diffuser adapter is removed. To require removal of the pump diffuser adapter during each routine disassembly of a RCP for the sole purpose of conducting a Code-required VT-3 examination is considered a hardship without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee's proposed alternative is authorized for the third 10-year ISI interval of HBRSEP2.

Principal Contributor: P. Patnaik

Date: November 9, 2000