February 25, 1988

Docket Nos. 50-280
and 50-281

Mr. W. L. Stewart
Vice President - Nuclear Operations
Virginia Electric and Power Company
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Dear Mr. Stewart:

SUBJECT: REQUEST FOR RELIEF FROM ASME SECTION XI REQUIREMENTS REGARDING REPLACEMENT OF COMPONENT COOLING AND RECIRCULATION SPRAY HEAT EXCHANGERS FOR SURRY UNITS 1 AND 2 (TAC NOS. 65901 AND 65902)

By letter dated July 23, 1987, as supplemented November 13, 1987, pursuant to 10 CFR 50.55a, paragraph g(5), you requested relief from certain ASME Boiler and Pressure Vessel Code (ASME Code) Section XI requirements with regard to the replacement of component cooling and recirculation spray heat exchangers at Surry Units 1 and 2.

We have reviewed your request. Based on our review, we have concluded that a relief may be granted as requested. The relief granted permits you to utilize component cooling water and recirculation spray heat exchangers meeting the requirements of ASME Section VIII, 1986 edition as the replacement for the original heat exchangers constructed per the requirements of ASME Section III, 1968 edition. The enclosed Safety Evaluation provides the details and conclusions of our review.

For the relief that has been granted, we have determined that the ASME Code Section XI requirements are impractical and that, pursuant to 10 CFR 50.55a(g)(6)(i), the relief is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest, giving due consideration to the burden on VEPCO that could result if the requirements were imposed on the facility.

Sincerely,

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosure: Safety Evaluation

cc: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF FROM ASME SECTION XI

REQUIREMENTS REGARDING REPLACEMENT OF COMPONENT COOLING

AND RECIRCULATION SPRAY HEAT EXCHANGERS

SURRY POWER STATION UNITS 1 AND 2

DOCKET NUMBERS 50-280 AND 50-281

INTRODUCTION

This report provides a safety evaluation of a request for relief from certain requirements of ASME Section XI pertaining to the replacement of component cooling and recirculation heat exchangers in Surry Units 1 and 2. The request was submitted by Virginia Electric and Power Company (the licensee) in a letter dated July 23, 1987. Additional information relative to the request was provided to the NRC in a letter from the licensee dated November 13, 1987.

The bases for the requirements from which relief has been requested and for granting the relief are derived from the Code of Federal Regulations, 10 CFR 50.55a(g)(5). The subject regulations require that nuclear power facilities, such as Surry Units 1 and 2, conform with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code (ASME Section XI). ASME Section XI provides requirements for replacement of components, such as the component cooling and recirculation spray heat exchangers. 10 CFR 50.55a(g)(6)(i) states that the Commission may grant relief from ASME Section XI requirements when they are determined impractical for a facility, provided the Commission determines that the granting of the relief will not endanger life or property or the common defense and security and, giving due consideration to the burden that would be placed on the licensee if the requirements were imposed, that it is otherwise in the public interest. The specific ASME Section XI requirements from which relief has been requested, the evaluation and conclusions are described below.

ASME SECTION XI REQUIREMENTS

In accordance with 10 CFR 50.55a(g), the edition and addenda of ASME Section XI applicable to Surry Units 1 and 2 are the 1980 Edition with addenda through Winter 1980, commonly abbreviated (80W80). ASME Section XI (80W80), Subsection IWA-7210, requires that replacement components comply with the edition of the construction code to which the original component was constructed, or alternatively, later editions of the same construction code.

The Surry Units 1 and 2 component cooling and recirculation spray system heat exchangers identified 1-CC-E-1A, -1B, -1C, and 1D, 1-RS-E-1A, -1B, -1C and -1D, 2-RS-E-1A, -1B, -1C, and -1D, were originally constructed to the requirements of ASME Section III, Class C, 1968 Edition (68).

RELIEF REQUESTED

The licensee determined that replacement of the subject heat exchangers was necessary. In seeking replacements the licensee found that procurement of replacement heat exchangers constructed in compliance with the construction code to which the original heat exchangers were constructed or alternatively, later editions of the same construction code, was impractical.

Because the original construction code, ASME Section III Class C, referred to Section VIII of the ASME Code, the licensee requested permission to use the 1986 Edition of Section VIII with addenda through the Winter of 1986 (86W86) of the ASME Code for the construction of the subject replacement heat exchangers.

BASES FOR RELIEF REQUEST

The licensee provided the following reasons as the bases for their relief request:

1. The original heat exchangers were manufactured to the requirements of the 1968 Edition of the ASME Code, Section III, Class C. This Construction Code refers the manufacturer immediately to Section VIII of the Code. It is presumed that the referral was to the 1968 Edition of ASME Section VIII. Manufacture of the heat exchangers to the original construction code is impractical because the 1968 ASME Code Section VIII requirements have been superseded by later editions and addenda. Therefore, the licensee has requested permission to use the latest effective edition and addenda of ASME Section VIII, which would be the 1986 Edition with addenda through the Winter 1986.

2. The heat exchanger manufacturing industry has maintained Section VIII of the ASME Code as the industry standard and many equipment manufacturers have not maintained their ASME Code Section III N-Stamp due to the present low business demand. Thus, the number of heat exchanger vendors that are even qualified to manufacture these replacement heat exchangers to a later edition of the ASME Code, Section III, is severely restricted.

3. It is impractical to impose the requirements of the ASME Section III Construction Code because the ASME Class C designation no longer exists and the heat exchangers would have to be manufactured to either ASME Class 2 or Class 3. In addition, the use of ASME Section III as the construction code would impose unjustified higher costs and longer procurement schedules.

The licensee has concluded that a vessel built to the 1986 ASME Code Section VIII, Division 1 will meet or exceed the original requirements of the 1968 ASME Code Section III, Class C. In addition, the licensee proposes to purchase the replacement heat exchangers from a vendor who has a quality assurance program in accordance with 10 CFR 50, Appendix B. By imposing this additional requirement, the licensee contends that the quality of the replacement component cooling water and recirculation spray heat exchangers would meet or exceed the requirements of the original construction code.

EVALUATION AND CONCLUSION

The NRC staff's evaluation of the safety significance of the change proposed by the licensee is as follows:

1. Based on an examination of the licensee's Drawings and the Manufacturers Data Reports (Form U-1) for the original heat exchangers, the staff accepts that the original Code applicable to the vessels was ASME Section III, Class C (68).

2. The staff determined that the original ASME Section III, Class C (68) requirements were based primarily on ASME Section VIII requirements. The ASME Section VIII requirements are specifically referenced in ASME Section III, Class C (68).

3. Based on a comparison of the design, fabrication and inspection requirements of the original Construction Code with the ASME Section VIII, Division 1 (86W86) requirements proposed for the licensee's heat exchangers, the staff finds that there is no safety-significant difference. Note: A detailed comparison of the requirements is described by the licensee in their letter to the NRC dated July 23, 1987.

4. The replacement heat exchangers will receive a U symbol rather than the N-Stamp the original heat exchangers received. These two certifications are similar; however, N-Stamp holders receive more intensive ASME review of their design, fabrication, and inspection procedures and N-Stamped heat exchangers receive a third party inspection. Based on the inherent conservatism of the ASME Code, Section VIII requirements, the ASME review of the procedures for U-Stamping, and conformance to the quality assurance criteria of 10 CFR 50, Appendix B, the licensee's proposed alternative for procurement of the heat exchangers is considered to provide an acceptable level of quality and safety pursuant to 10 CFR 50.55a(a)(3)(i).

5. If the ASME Code, Section XI requirements are imposed, the heat exchangers would have to be manufactured to either ASME Code, Section III, Class 2 or 3 rules. The manufacturer of the original heat exchangers has not retained the certification to N-Stamp heat exchangers. Procurement of Section III heat exchangers would result in higher costs and longer procurement schedules and is impractical.

Based on the impracticality of complying with the ASME Code, Section XI, requirements for replacement components, the burden on the licensee of complying with the Code, and the licensee's proposed alternative, pursuant to 50.55a(g)(6)(i), relief from the Code requirements may be granted as requested. The staff finds that granting this relief will not endanger life or property or the common defense and security and is otherwise in the public interest. In granting this relief, the staff has given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Dated: February 25, 1988

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