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US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

10 CFR Part 50
Section 50.55(a)

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Request for Relief from ASME Boiler & Pressure Vessel Code,
Section XI, Section IWA-4400 Pressure Testing Requirements

The purpose of this letter is to request NRC review and approval of a request for relief from hydrostatic test requirements of Section XI, IWA-4400, of the ASME Boiler and Pressure Vessel Code, 1986 Edition. Specifically, we are requesting approval to perform alternative testing (system leakage test at normal operating pressure with VT-2 inspection prior to reactor startup) in lieu of hydrostatic testing for certain ASME Class 1 replacement welds.

The work scheduled for the upcoming 1994 refuel outage for which we are proposing alternate testing involves the replacement of the four 18" outboard Main Steam Isolation Valves (MSIVs). The existing valves, which are of a globe design, have had a history of seat leakage during Appendix J testing and are being replaced with gate valves to improve leak test performance. These valves and any associated piping and welds inboard of the valves are part of the reactor coolant pressure boundary and are therefore ASME Class 1.

Section IWA-4400 of the ASME Boiler and Pressure Vessel Code specifies that a hydrostatic test be performed following repairs to the reactor coolant pressure boundary. Sections IWA-5214 and IWB-5222 of the Code require that the test be conducted at 110% (1100 psig in this instance) of system normal operating pressure (1000 psig). In lieu of performing a system hydrostatic test, we propose to perform alternate testing in the form of a system leakage test at normal system operating pressure (1000 psig) in conjunction with VT-2 inspection. The test would be conducted in accordance with the rules of ASME Code Case N-416-1 (Alternate Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2, & 3).

Basis for Relief:

10 CFR Part 50, Section 50.55(a)(3) allows the use of proposed alternatives to

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Code requirements provided it can be demonstrated that (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements of the section would result in hardship or unusual difficulties without a compensating increase in the level of quality or safety. The following information demonstrates that this relief request meets both criteria:

1. Performance of a hydrostatic test at a pressure greater than the nominal system operating pressure is of little benefit with respect to assuring system integrity, therefore, performance of the test does not provide a compensating increase in quality or safety. This has been recognized by the ASME Code Committee through issuance of Code Case N-416-1.

2. It is not feasible to isolate the outboard MSIV installation welds such that local pressure test could be performed. In order to do this, it would be necessary to fill and pressurize the piping between the inboard and outboard MSIV in each line. This would cause the inboard MSIVs to be pressurized from below the seat, which would unseat the inboard valves and invalidate the test. Thus, in order to perform a hydrostatic test of the replacement welds, it would be necessary to pressurize the reactor vessel and a large portion of the reactor coolant pressure boundary.

3. Performance of a special post-repair reactor coolant system hydrostatic test during the 1994 refueling outage would result in a hardship in that performance of the test represents a significant cost, schedule, and ALARA impact on the plant. A brief summary of the difficulties associated with this test is as follows:

   (a) Technical Specification 3.6.B.1 requires selection of the hydrostatic test temperature based on pressure (Technical Specification Figure 3.6-2), with an adjustment for beltline fluence (Technical Specification Figure 3.6-1). Based on estimates of fluence at the end of the current cycle, it is calculated that the minimum temperature for conduct of the test will be approximately 208°F.

   Plant Technical Specifications (3.5.A.1 and 3.5.C.1) require that certain Emergency Core Cooling Systems (ECCS), Core Spray and Low Pressure Coolant Injection specifically, be operable whenever reactor water temperature is 212°F or greater.

   There is insufficient margin between the minimum test temperature (208°F) and the Technical Specification limit above which ECCS operability is required (212°F) to allow conduct of the test without the required ECCS systems being available. Requiring these systems to be operable in

support of the post repair hydrostatic test adds significant complexity to outage planning and adds 2 days to the overall outage schedule.

(b) The performance of a reactor coolant system hydrostatic test would require that the main steam safety/relief valves either be removed and replaced with blank flanges or gagged by installation of gagging devices to prevent valve actuation during the test. We would prefer to avoid this work if possible since it must be performed in a relatively high dose rate area in the drywell.

(c) Preparation for and performance of the test will increase accumulated outage dose by an estimated 39 man-Rem (assuming blank flange installation). It is contrary to the principles of ALARA to accumulate such a large does unless absolutely necessary.

When taking the above into consideration, it is estimated that the cost of preparing for and performing a special reactor coolant system post-repair hydrostatic test is $1,320,000 (including replacement power costs, ALARA costs and labor costs). We wish to avoid incurring such a large cost to conduct a special hydrostatic test that is of little technical or practical benefit and that will not result in compensating increase in quality or safety.

4. All valve replacement welds will be subjected to visual and liquid penetrant inspection. In addition, the welds will be subjected to ultrasonic and radiographic inspection. All valve installation welds that are considered ASME Code Class I (i.e., the inboard butt welds connecting the valves to the main steam lines) will also be subjected to a 100% (1000 psig) system leakage test prior to startup. Neither gagging nor removal of the safety/relief valves is required for this test. In addition, the valves will both be subjected to a 3250 psig pressure test by the manufacturer.

Based on the above, we conclude that the basis for this relief request meets the criteria of 10 CFR Part 50, Section 50.55a(a)(3).

In summary, performing the 100% (1000 psig) system leakage test in addition to the extensive weld inspection will ensure the pressure boundary integrity of the reactor coolant system. Approval of this request will avoid the additional occupational radiation exposure, cost and schedule impact associated with performing the 110% (1100 psig) ASME Boiler and Pressure Vessel Code hydrostatic test during the 1994 refueling outage.

The refueling outage is currently scheduled to begin on September 15, 1994. NRC staff review and approval of this request for relief is needed prior to

August 12, 1994 to allow time to revise outage planning should the staff not concur.

This letter contains the following new NRC commitments:

1. If this relief request is approved, testing and inspection of the MSIVs replacement welds will be conducted in accordance with the rules of ASME Code Case N-416-1 (Alternate Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2, & 3).

2. The above testing will include visual, liquid penetrant, ultrasonic, and radiographic inspection of the MSIV installation welds.

Please contact Terry Coss, Sr Licensing Engineer, at (612) 295-1449 if you require additional information.

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