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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

EXEMPTION FROM APPENDIX J TYPE C TESTING OF THE REACTOR

BUILDING CLOSED COOLING WATER SYSTEM

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR POWER STATION, UNIT 2

DOCKET NO. 50-336

1.0 INTRODUCTION

By letter dated June 8, 1990, Northeast Nuclear Energy Company (the licensee) requested an exemption from Appendix J to 10 CFR Part 50 to relieve the containment isolation valves in the reactor building closed cooling water (RBCCW) system from Type C (local leakage rate) testing requirements. This exemption request is the culmination of many rounds of correspondence between the staff and the licensee that began with a letter from the licensee dated July 14, 1987. The correspondence is detailed in the licensee's letter of June 8, 1990; in summary, the basic disagreement was whether or not the 12 containment isolation valves in the RBCCW system were required to be Type C tested by Appendix J. The licensee has now requested an exemption from the requirement to Type C test these valves. The staff's review of the licensee's request is given below.

2.0 EVALUATION

The licensee has provided several reasons to support the contention that the exemption will not present an undue risk to the public health and safety. First, the 12 RBCCW system valves are designed to be open in the event of an accident because the RBCCW system is intended to cool the Containment Air Recirculation (CAR) system (sometimes called fan coolers). This safety-related function requires the circulation of water in the RBCCW system (at a minimum pressure of 60 psig) in the event of an accident and consequently requires the valves to be open. As a result, the valves do not receive a containment isolation signal in the event of an accident--the remote manual actuation switches for some valves are locked in the open position in the control room; other valves will open on a Safety Injection Actuation System signal. Moreover, on a failure of DC power or instrument air, the valves would fail in the open position. Clearly, if the valves are open as designed during an accident, their leak-tight integrity is irrelevant.

Second, the maximum calculated pressure in the containment in the event of a design bases accident is 54 psig. Because the minimum design pressure in the RBCCW system is 60 psig, the only leakage through the valves would be into the containment from the RBCCW system. It may be that a single active failure

(e.g., of a pump), or failure of a component that may not be safety-grade or may only satisfy some but not all of the current staff standards for safety-grade equipment, might result in RBCCW pressure being less than 54 psig, but it is likely that system pressure will be as designed. Also, the valves would be required to close only if an RBCCW system line or CAR system cooler ruptured inside the containment. However, the possibility of a rupture in connection with a design basis accident is small. Specifically, the RBCCW system is a Seismic Category 1 system; it is designated Safety Class 3 inside containment; and it is protected from missiles projected through failures of components that are not Seismic Category 1 by virtue of its location and configuration. Although current standards for a closed system inside containment call for it to be Safety Class 2, the licensee states that fabrication of the RBCCW system to Safety Class 3 requirements was in accordance with the acceptance criteria for those systems in effect when it was designed; thus, consistent with the licensing basis of the plant, the probability of rupture should be assumed to be extremely small. The staff finds that, for this low energy system, the difference in Safety Classes 2 and 3 in terms of fabrication and surveillance requirements is sufficiently small that there is good likelihood that the system will remain intact during an accident.

Third, the licensee states that in the event of an accident with no RBCCW system operation, the surge tank that feeds the RBCCW system and through which it is vented would, as a result of its elevation, maintain a minimum pressure therein of 42 psig. Therefore, the only leakage through the valves into the RBCCW system would be that forced by containment pressure in excess of 42 psig. Although the maximum calculated pressure in the containment in the event of a design basis accident is 54 psig, it is unlikely to remain above 42 psig after the initiation of containment spray. Moreover, even if the containment atmosphere in an accident leaks into the RBCCW system and into its surge tank, that atmosphere would escape only into the enclosure building, where it would be collected and processed by the Enclosure Building Filtration System; a spill from the surge tank would be retained in the enclosure building. Consequently, the impact of valve leakage is reduced.

3.0 CONCLUSION

On the basis of the above considerations, the staff concludes that the request to exempt the 12 RBCCW system valves from Type C testing is justified and acceptable.

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