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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO REQUEST FOR RELIEF FROM ASME CODE TEST REQUIREMENTS

FOR MAIN STEAM SYSTEM PRESSURE RETAINING COMPONENTS

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-245

1.0 BACKGROUND

Main Steam Pressure Retaining Components

10 CFR 50.55a(g) requires nuclear power facility piping and components to meet the applicable requirements of Section XI of the ASME Boiler and Pressure Vessel Code (hereafter called the Code). The licensee has determined that certain test requirements of Section XI of the Code cannot be performed on the main steam system pressure retaining components. The Northeast Nuclear Energy Company (the licensee) subsequently requested relief from the subject Code requirements. Pursuant to 10 CFR 50.55a(g)(6)(i), the Commission will evaluate determinations of impracticality, and may grant relief and may impose alternative requirements.

1.1 Licensee's Relief Request

By letter dated February 22, 1991, the licensee requested relief from Code requirements concerning hydrostatic pressure testing of main steam system pressure retaining components and proposed an alternative examination.

2.0 EVALUATION OF RELIEF REQUEST

2.1 Code Requirement

Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition including the Winter 1980 Addenda, Table IWC-2500-1 Examination Category C-H, requires a system hydrostatic pressure test (IWC-5222) be performed on the main steam system's Class 2 pressure retaining components once every 10-year interval. The system hydrostatic test pressure determined by Paragraph IWC-5222(a) of the Code is to be at least 1.25 times system design pressure (1.25 x 1250 P_d = 1562 psig).

2.2 Code Relief Requested

Relief is requested from performing a hydrostatic pressure test at a pressure of 1562 psig on the main steam system's Class 2 pressure retaining components.

2.3 Basis for Relief

The Code-required test pressure of at least 1562 psig cannot be achieved without overpressurizing the Class 1 piping and reactor pressure vessel to pressures beyond those allowed by the Code. The Main Steam Isolation Valves (MSIVs) are the valves that isolate the Class 2 portion (turbine side) of the main steam system from the Class 1 portion (reactor pressure vessel side). The MSIVs are pneumatically actuated angle globe valves that seat with steam pressure from the reactor vessel side. The valves are closed by the combined force of steam pressure and main valve piston spring pressure. The valves are not capable of isolating the Class 1 piping from Class 2 piping when pressurizing the Class 2 piping side. The water pressure on the Class 2 piping side of an MSIV would overcome the valves' main piston spring pressure and would unseat the valves' disk and relieve pressure to the reactor vessel.

2.4 Proposed Alternative Testing

The licensee has requested that Code Case N-479 "Boiling Water Reactor (BWR) Main Steam Hydrostatic Test," which was approved on July 24, 1989 by ASME, be used as an alternative to the requirements of Paragraph IWC-5222(a) of the Code.

The following test would be performed during the 1991 refueling outage.

(1) The hydrostatic pressure test of the main steam system's Class 2 pressure retaining components will be performed in conjunction with the Class 1 hydrostatic pressure test.

(2) The hydrostatic test pressure for the Class 2 portion will meet the requirements of Article IWA-5000 and paragraph IWB-5222 of the Code.

(3) This alternative test will be documented on Form NIS-1 "Owner's Data Report for Inservice Inspections."

2.5 NRC Staff Evaluation

The hydrostatic test is impractical to perform at the code-required pressure because the design of the MSIVs will not withstand pressure in the reverse direction. In order to perform the hydrostatic test at the Code-required pressure, the MSIVs would require disassembly and reassembly for installation of plugs. The increase in plant safety would not compensate for the burden placed on the licensee that would result from imposition of the requirement.

3.0 CONCLUSION

ASME Code Case N-479 permits the hydrostatic test pressure for the Class 2 portion of the subject piping to meet the requirements of IWA-5000 and IWB-5222. ASME Code Case N-479 was approved by the ASME Code Committee on

July 24, 1989. Although the proposed alternative test pressure (Class 1 hydrostatic test pressure) is lower than the Code-required Class 2 hydrostatic test pressure, the alternative test pressure is greater than the operating pressure of the subject piping. Therefore, the proposed alternative test will provide assurance of the continued inservice structural integrity. It is concluded that public health and safety will not be endangered by allowing the alternative test, as described in ASME Code Case N-479, to be performed in lieu of the Code requirement. Therefore, relief is granted as requested, in accordance with 10 CFR 50.55a(g)(6)(i).

This 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 upon the licensee that could result of the requirements were imposed on the facility.

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Date: March 25, 1991