



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 143

TO FACILITY OPERATING LICENSE NO. NPF-49

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By letter dated April 14, 1997, the Northeast Nuclear Energy Company, et al. (the licensee), submitted a request for changes to the Millstone Nuclear Power Station, Unit No. 3 Technical Specifications (TS). Technical Specification 3.4.9.3 requires, in part, that two relief valves be operable to protect the reactor coolant system from overpressurization when any reactor coolant system cold leg is less than 350°F. The proposed amendment would revise the setpoint of the residual heat removal (RHR) suction relief valves from 450 psig \pm 3% to 440 psig \pm 3%.

2.0 EVALUATION

TS 3.4.9.3 requires that an overpressure protection system be operable when any reactor coolant system cold leg is less than 350°F. This ensures that the reactor coolant system (RCS) will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50. This requirement is satisfied at Millstone Unit 3 by requiring either (1) two power-operated relief valves (PORVs) to be operable (TS 3.4.9.3.a.1), (2) two RHR suction relief valves to be operable (TS 3.4.9.3.a.2), (3) one PORV and one RHR suction relief valve to be operable (TS 3.4.9.3.a.3), or (4) the RCS depressurized with an RCS vent of greater than or equal to 5.4 square inches (TS 3.4.9.3.b). In addition, TS 3.4.9.3.a.2 currently requires that the two RHR suction relief valves have setpoints of 450 psig.

In its letter dated April 14, 1997, the licensee requested that the RHR suction relief valve setpoint be lowered to 440 psig and a tolerance band be added (\pm 3%) since the setpoint cannot be set at a specific value. In its letter, the licensee stated:

The decrease in the residual heat removal (RHR) suction relief valves setpoint was the result of recent reviews of the Millstone Unit No. 3 design bases. The review revealed that the original setpoint of 450 psig (with [an] ASME Code tolerance of \pm 3%) of the RHR suction relief valves was modified in 1985 when it was determined that the setpoint was too high to prevent potential overpressurization of the RHR

and RCS when the RHR is unisolated from the RCS. The setpoint was lowered to 440 psig (with [an] ASME Code tolerance of $\pm 3\%$), in 1985 prior to the issuance of Millstone Unit No. 3 operating license. Although the operating procedures and most design documents were modified to indicate the 440 psig $\pm 3\%$ setpoint, the setpoint listed in Technical Specification 3.4.9.3 for the suction relief valves was not changed.

Final Safety Analysis Report (FSAR) Section 5.4.7.2.4 describes the RHR suction relief valves. The FSAR states that these relief valves relieve the combined flow of two charging pumps at the relief valve set pressure. These relief valves also protect the system from inadvertent overpressurization during plant cooldown or startup. Each valve has a relief flow capacity of 800 gpm at a set pressure of 440 psig.

In its April 14 letter, the licensee stated that the decrease in the relief valve setpoint was evaluated against the valve's ability to mitigate a postulated RCS cold overpressurization event. The evaluation calculated the maximum expected RCS pressure during a cold overpressurization event to be 547 psig with the relief valves set conservatively at their upper limit of 453.2 psig (440 psig + 3%). The 547 psig RCS pressure is 11 psig less than the 10 CFR Part 50, Appendix G allowable pressure of 558 psig. The evaluation concluded that an RHR relief valve setpoint of 440 psig $\pm 3\%$ (≥ 426.8 psig and ≤ 453.2 psig) is adequate to ensure that the 10 CFR Part 50, Appendix G requirements are not exceeded during a postulated cold overpressurization event.

Additionally, the licensee stated that the decrease in the relief valve setpoint was evaluated against the pressure in which the RHR is unisolated from the RCS. Each RHR loop is isolated from the RCS on the suction side by three normally closed, motor-operated valves. Two of the valves are interlocked to prevent opening if the RCS pressure is above 375 psig. This provides adequate margin between the minimum relief valve setpoint and the maximum RCS pressure. The evaluation concluded that an RHR relief valve setpoint of 440 psig $\pm 3\%$ (≥ 426.8 psig and ≤ 453.2 psig) provides sufficient allowance to minimize the probability of an inadvertent valve opening.

The staff has reviewed the licensee's request and has determined that lowering the RHR suction relief valve setpoint to 440 psig $\pm 3\%$ is acceptable. The staff's determination is based on (1) the fact that the upper limit of the setpoint is conservatively set so that the maximum expected RCS pressure during a postulated cold overpressurization event is below the Appendix G requirements, and (2) the fact that the lower limit is conservatively higher than the maximum RCS pressure when the RHR system is put into service. Further, the staff has determined that the addition of a tolerance band is acceptable in that a relief valve setpoint cannot be set to an exact value.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (62 FR 30634). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: July 10, 1997