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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 97 TO FACILITY OPERATING LICENSE NO. DPR-65

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL;

MILLSTONE NUCLEAR POWER STATION, UNIT 2

DOCKET NO. 50-336

Introduction

By letter dated October 12, 1983, (Ref. 1) Northeast Nuclear Energy Company (NNECO or licensee) proposed two changes to the Millstone Nuclear Power Station, Unit 2, Technical Specification 3.4.4, entitled Pressurizer. The first change revises the allowed pressurizer level band during operation in Modes 1, 2 and 3. The current Technical Specification 3.4.4 requires the pressurizer level to be maintained within ± 5% of its programmed value during periods of normal operation. The proposed modification allows the pressurizer level to be maintained between 35% and 70%, inclusive. The licensee proposed this change in order to allow for more effective pressurizer cooling for entry into Mode 4. Additionally, since the pressurizer level change is used in the method for determining reactor coolant system leakage, the proposed revision will allow more data to be obtained on the rate of pressurizer level decrease.

The second change to the Technical Specification (TS) imposes more restrictive operability requirements for the pressurizer heaters. The current TS requires the operability of at least 130kw of pressurizer heater capacity powered from emergency power supplies. Should the heaters become inoperable, the licensee has 72 hours to restore the emergency power supply or be in at least Hot Standby within 6 hours and Hot Shutdown within 12 hours. The proposed change requires the operability of at least two groups of pressurizer heaters, each with a capacity of a least 130kw, which are capable of being supplied by emergency power. If one of these groups becomes inoperable, the current Action Statement, described above, is employed. If both groups become inoperable, the unit must be placed in Hot Standby within 6 hours and Hot Shutdown within 12 hours.

Evaluation

To assure that the proposed modification to the pressurizer level band does not significantly affect the consequences of postulated transients and accidents, the licensee reviewed the plant safety analyses and assessed the impact of the proposed change on the event consequences. The licensee's evaluations are documented in references 1 and 2.

The licensee assessed the impact of the proposed pressurizer level change on overheating transients by reanalyzing the limiting transients, the loss of load and loss of normal feedwater transients, with a 75% pressurizer level

These analyses were performed with the LOFTRAN code and were compared to the results documented in the Basic Safety Report (BSR) for Millstone Unit 2 Cycle 4 operation. For the loss of load event, the reanalysis showed a peak pressure of 2581 psia as compared to the BSR value of 2573 psia. For the loss of normal feedwater event, peak pressure was 2538 psia using the 75% pressurizer level. Minimum DNBR was greater than 1.30 for both events. As neither case violated the acceptance criterion for peak pressure of 2750 psia (110% of design pressure), nor did they violate the minimum DNBR criterion, the staff finds the event consequences acceptable.

The effect of the proposed change on overcooling events was assessed by examining the steam line rupture accident which is the limiting overcooling event. The BSR analysis was performed using 31% pressurizer level and the results showed that the minimum DNBR was greater than 1.3. As this event was calculated using a pressurizer level which is less than that proposed by the revised TS and results in acceptable consequences, the staff finds that the proposed change in pressurizer level will not significantly affect plant consequences for overcooling events.

Evaluation of the effect of the proposed pressurizer level change was also performed for the SG tube rupture and small break LOCA events. The effect of the proposed change in pressurizer level on the SG tube rupture event is to delay the reactor trip on low pressurizer pressure and thereby increase mass released through the tube rupture. This event was previously analyzed using a pressurizer level of 65% and was reanalyzed by the licensee using a pressurizer level of 70%. The reanalysis showed there was no significant impact on the transient. The staff finds this assessment acceptable.

For the small break LOCA, the worst case break, a 0.1 ft^2 break in the pump discharge piping, was re-evaluated using a pressurizer level of 35%. The results showed that the pressurizer would empty 20 seconds earlier and the consequent minimum core inventory and peak cladding temperature would occur 20 seconds sooner than the previously analyzed case. The earlier core uncovery results in an increase in the cladding temperature of 14°F to 1985°F, thus meeting the peak cladding temperature limit of 2200°F as specified by 10 CFR 50.46. Hand calculations have been performed which verified the licensee's conclusions that the pressurizer would drain approximately 20 seconds earlier. Thus, the staff finds the results acceptable.

For other postulated transients and accidents, the licensee concluded that the proposed change in pressurizer level band would not impact the results. Based on our review of the BSR, the staff concurs with the licensee's assessment.

Relative to the proposed change in the operability requirements to the pressurizer heaters, the staff finds the change to be acceptable as it is more restrictive than currently employed.

Based upon the foregoing, the staff has concluded that the proposed changes to TS 3.4.4, entitled Pressurizer, are acceptable.

Environmental Consideration

The amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. 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 this amendment.

Conclusion

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 5, 1984.

Principal Contributor:

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References

1. Letter, W. G. Council (NNECO) to J. R. Miller (NRC), "Millstone Nuclear Power Station, Unit No. 2, Proposed Revisions to Technical Specification Modification of Pressurizer Level Band," October 12, 1983.

2. Letter, W. G. Council (NNECO) to J. R. Miller (NRC) "Millstone Nuclear Power Station, Unit No. 2 Additional Information to Support Modification of the Pressurizer Level Band," May 16, 1984.