



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 61

TO FACILITY OPERATING LICENSE NO. DPR-21

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR POWER STATION, UNIT 1

DOCKET NO. 50-245

1.0 INTRODUCTION

By letter dated January 12, 1993, as supplemented January 19, 1993, the Northeast Nuclear Energy Company (NNECO) submitted a request for changes to the Millstone Nuclear Power Station, Unit 1 Facility Operating License. NNECO requested that the proposed license amendment be reviewed on an exigent basis and that a Temporary Waiver of Compliance (TWOC) be issued until such time as the NRC acts on the proposed license amendment. On January 14, 1993, the NRC staff verbally granted the TWOC, with the cited TS requirements and compensatory actions. The NRC staff confirmed the verbal authorization in a letter dated January 15, 1993.

The requested Technical Specification (TS) change would allow for temporarily bypassing the Main Steam Line Radiation Monitor (MSLRM) trip function (which results in a reactor scram and Group 1 isolation), for a period not to exceed 2 hours, in order to allow condensate demineralizers to be returned to service, thereby eliminating the possibility of an inadvertent initiation of the MSLRM trip function. The January 19, 1993, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 DISCUSSION

On December 29, 1992, while returning a condensate demineralizer to service, a radiation spike occurred resulting in high radiation alarms of the MSLRM and the turbine deck area radiation monitor. The main steam line radiation reading increased from the 350 mR/hr normal background reading to approximately 1300 mR/hr. The MSLRM has a reactor trip setpoint which is designed to initiate at or below the TS requirement of seven times the normal background reading. To provide margin for instrument uncertainty and the potential for instrument drift, this setpoint is conservatively set at 1700 mR/hr. Upon receipt of an MSLRM trip signal, the reactor scrams and the Group 1 Isolation valves close.

NNECO's January 12, 1993, submittal requested exigent authorization of the TS change since plant operation dictated that the current typical ultrasonic resin cleaning (URC) cycle of two condensate demineralizers per week be resumed promptly. NNECO stated, that they believe the requirements of the current TSs may result in a spurious and unnecessary main steam isolation valve (MSIV) closure event and reactor scram due to the main steam line high radiation monitor trip setpoint being exceeded when a condensate demineralizer is returned to service. Due to this concern, a clean demineralizer was not rotated into service from December 29, 1992 (the date of the spike) until the TWOC was issued. Once the TWOC was granted, a clean demineralizer was rotated into service, and the normal cycle of URC was reinitiated. The reasons why NNECO considers it acceptable to operate with the MSLRM trip function bypassed during the period of time when condensate demineralizers are rotated into service, and the NRC staff's evaluation are presented below.

3.C EVALUATION

NNECO's ongoing investigation of the MSLRM alarm on December 29, 1992, has not determined the root cause of the spike. NNECO has ruled out the possibility of fuel failure because spike was not received by the off-gas radiation monitor, and the radiation release due to fuel failure would have caused a high radiation level at the off-gas radiation monitor due to the long half-life of these isotopes. Other isotopes, such as N^{16} , that may have caused the spike at the MSLRM, have a very short half-life and would decay before reaching the off-gas monitor. NNECO also believes that the MSLRM radiation spikes were not due to crud intrusion or entrained air, which were the cause of similar events in 1985 and 1989 respectively. In 1985, due to a problem in the transfer of spent resin, URCs had not been performed on a normal frequency. A corrosion product release caused a high radiation condition and a subsequent plant scram and MSIV closure. Corrosion products had been observed in the condensate demineralizers. Increases in both main steam line radiation and off-gas radiation levels identified a long-lived isotope as the cause of the high radiation condition. As part of the corrective actions, URC frequency was increased to two demineralizers per week and there have been no substantial increases in corrosion products in the demineralizers or repeat occurrences of this particular event. In 1989, air was introduced into the condensate system from an unvented section of condensate demineralizer piping. Procedures which govern placing condensate demineralizers in service were revised and vents were added to the unvented section of piping. Since the completion of these corrective actions, there have been no repeat occurrences of this particular event which was attributed to air intrusion.

To prevent the possibility of a spurious radiation spike resulting in reactor scram and MSIV closure, the requested Technical Specification (TS) amendment allows NNECO to bypass the MSLRM trip function for up to 2 hours while returning condensate demineralizers back to service after URC of the demineralizers. Due to concerns that corrosion products will collect in the demineralizers, NNECO currently performs URC on two demineralizers per week. While the MSLRM trip function is bypassed, NNECO has committed to compensatory measures. These compensatory actions, which are documented in plant

procedures, include having a dedicated operator monitoring the MSLRM and off-gas radiation monitors, and initiating a manual reactor scram, isolating the off-gas discharge valve, and closing the MSIVs in the event that one MSLRM and one off-gas radiation monitor reach their respective high radiation trip setpoints (the trip setpoints do not have to be reached concurrently). The licensee has also committed to remaining at a stable power level during the period of time that these trips are bypassed. These compensatory actions provide assurance that the reactor will be scrammed and isolated under conditions when fuel failure is indicated, while minimizing the potential for unnecessary isolation and scram during the demineralizer change process.

The staff also notes that the Millstone Unit 1 design basis accident analysis does not take credit for the MSLRM trip function. In the Control Rod Drop Accident (CRDA), the Millstone Unit 1 Final Safety Analysis Report assumes all the activity from failed fuel rods is immediately transported to the turbine/condenser and is available for leakage from the condenser. The CRDA is only significant at power levels below 20%, therefore, as an extra conservatism, NNECO has committed to performing this condensate demineralizer evolution only at steady state power levels greater than 20%. A CRDA event at greater than 20% power would be of low significance.

The bypassing of the MSLRM trip function will allow Millstone Unit 1 to continue to safely operate, while minimizing the potential for an inadvertent main steam line isolation valve closure and reactor scram. The NRC staff has concluded, based on the review of NNECO's request and the compensatory actions which will be taken during the condensate demineralizer change process, that the operation of Millstone Unit 1 in conformance with TS Tables 3.1.1 and 3.2.1, provides an acceptable level of safety and does not present any undue risk to the health and safety of the public.

4.0 EXIGENT CIRCUMSTANCES

NNECO's January 12, 1993, submittal stated that exigent authorization of the proposed license amendment change was necessary in order to continue plant operation. Without NRC approval of the amendment request, NNECO stated that it would be required to shutdown Millstone Unit 1 due to operational constraints, unless a condensate demineralizer can be returned to service. The staff considers the request to be valid and that shutting the plant down if a condensate demineralizer cannot be returned to service would not necessarily be appropriate. The staff also considers that NNECO took reasonably timely action in making this request and that exigent actions on the part of the NRC staff are appropriate pursuant to 10 CFR 50.91(a)(6).

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that the license amendment involves no significant hazards consideration if operation of the facility, in accordance with the amendment, would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

The trip function of the MSLRMs is a postaccident function and, therefore, a change to this function cannot increase the probability of occurrence of previously evaluated accidents. The Millstone Unit 1 design basis accident analysis does not take credit for this trip function and hence there are no effects on the consequences of previously evaluated accidents. In the control rod drop accident, the Millstone Unit 1 Updated Final Safety Analysis Report assumes that all activity from failed fuel rods is immediately transported to the turbine/condenser and is available for leakage from the condenser.

Additionally, the main steam activity detected by the MSLRMs will be removed by the steam jet air ejectors, be monitored by the redundant off-gas monitors and be directed to the off-gas treatment system. The sensitivity of the off-gas monitors is much greater than the MSLRMs. The noble gas activity required to cause the MSLRMs to exceed their alarm setpoint will be well above the trip setpoint for the off-gas monitors. The off-gas monitors will automatically initiate closure of the off-gas system discharge valve after a 15 minute time delay and hence, trap all activity within the off-gas system. Therefore, no significant activity is expected to be released to the public, since it would be contained within the off-gas system.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

The change allows the MSLRM trip function to be bypassed for a short period of time (conservatively selected as 2 hours per occurrence) while condensate demineralizers are placed into service. The direct impact on the plant is that this particular trip function (i.e., MSIV closure and reactor scram) will not actuate while it is bypassed. Since the Millstone Unit 1 design basis accident analysis does not credit this trip function to demonstrate acceptable radiological consequences, the change has effectively been evaluated previously and is enveloped by the existing analysis. As stated above, in the control rod drop accident, all activity from failed fuel rods is assumed to be immediately transported to the turbine/condenser and is available for leakage from the condenser.

3. Involve a significant reduction in a margin of safety.

The change does not impact the physical protective boundaries or affect the calculated off-site dose consequences. Therefore, there is no impact on the margin of safety. Furthermore, the change will improve the overall reliability of the plant when compared to the as-found system, since the change will reduce the chances of an unnecessary plant transient occurring as a result of an inadvertent MSIV closure at 100 percent power.

Accordingly, the NRC staff concludes that the proposed amendment involves no significant hazards consideration.

6.0 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.

7.0 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 (58 FR 6023). 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.

8.0 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: February 19, 1993