



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 69 TO PROVISIONAL OPERATING LICENSE NO. DPR-21

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-245

1.0 INTRODUCTION

By letter dated September 4, 1980, supplemented by letter dated September 29, 1980, Northeast Nuclear Energy Company (NNECo) requested changes to the Technical Specifications appended to Provisional Operating License No. DPR-21 for Millstone Nuclear Power Station, Unit No. 1. The changes to the Appendix A Technical Specifications would permit core modifications to be performed without the required three (3) counts per second (cps) on Source Range Monitors (SRM) during:

- Core Unloading: Using a spiral unloading pattern to remove fuel assemblies; and
- Core Reloading: With less than nine (9) fuel assemblies at the center of the core next to temporarily-installed portable dunking type detectors. The dunker detectors are used for increased neutron detection sensitivity. No more than nine fuel assemblies can be reloaded at the core center according to the proposed changes unless the startup count rate is at least 3 cps on the SRMs and/or the temporarily-installed dunker detectors. The Technical Specification changes were proposed by the licensee to permit full core unloading and reloading without special neutron source devices inserted in the core to provide the minimum neutron count level of 3 cps.

2.0 DISCUSSION AND EVALUATION

The proposed changes to the Technical Specifications will permit complete removal of all of the fuel assemblies from the core. All of the control rods will remain fully inserted during the fuel unload or reload operation.

The current technical specifications require that a count rate of 3 cps be maintained whenever core alterations are being performed. This count rate is monitored by SRMs in the quadrant and adjacent to the quadrant being altered, or by "dunking detectors" connected into the appropriate rod block circuitry. The Technical Specifications also required that there be two (2) operable SRMs in or adjacent to any quadrant where fuel or control rods are being removed.

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The first requirement assures that, whenever criticality is possible, neutron flux is monitored so that blind (unmonitored) approach to criticality is not possible. The second requirement assures that there is adequate monitoring in any quadrant in which alterations are being made.

During normal refueling and fuel shuffling, a count rate of 3 cps is easily maintained due to the presence of other exposed fuel in the core. This radioactive disintegration and associated spontaneous fission in exposed fuel assemblies is dependent on the amount of exposure and the time lapse since exposure (amount of decay). During normal refueling operations, the 3 cps minimum level is easily maintained. At times when the entire core is to be removed, however, the count rate will eventually fall to below 3 cps. When the last few assemblies are being removed, there is difficulty in demonstrating a count rate of 3 cps using either SRMs or dunker detectors.

The General Electric Company (GE), the fuel vendor, has provided information that, for all fuel types in use in the Millstone Nuclear Power Station, Unit No. 1 core, more than eight uncontrolled fuel assemblies in a 2 x 4 array are required to achieve criticality. The basis for requiring a minimum count rate of 3 cps whenever core alterations are being performed is to ensure that neutron production is being monitored whenever criticality is possible. This basis is satisfied by the proposed specification which would allow less than 3 cps on any SRM only when unloading using a spiral pattern or until eight or less assemblies are reloaded at the core center adjacent to portable dunkers. Under such conditions, adequate margin to criticality is assured so that the 3 cps rate need not be maintained. All control rods fully inserted provides additional assurance that the reactor will remain subcritical when the neutron count rate is below three.

On the basis of the foregoing discussion and evaluation, the proposed Technical Specification changes are acceptable.

3.0 ENVIRONMENTAL CONSIDERATIONS

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact, and pursuant to 10 CFR Section 51.5(d)(4) that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the amendment.

4.0 CONCLUSION

We have concluded based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: October 9, 1980