



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 127

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 June 29, 1995, Northeast Nuclear Energy Company (NNECO/the licensee), requested an amendment to Facility Operating License No. NPF-49 for the Millstone Nuclear Power Station, Unit No. 3. This amendment request proposes changes to the Surveillance requirements in the Technical Specifications (TS) 4.6.4.2, 4.7.1.2.1.c, 4.7.3.b, 4.7.4.b, and 4.7.10.e to accommodate a change to a 24-month operating cycle between refuelings. This amendment request also proposes to delete the phrase "during shutdown" from these specifications, as well as delete TS 4.6.4.2.a. The present TS are based on an 18-month cycle. This amendment involves only a portion of the surveillance requirements (SRs) affected by a change to a 24 month operating cycle between refuelings. The remaining changes are the subject of other amendment requests. The SRs affected by this amendment request pertain to the Electric Hydrogen Recombiners, the Auxiliary Feedwater System, the Reactor Plant Component Cooling Water System, the Service Water System and Snubbers.

2.0 BACKGROUND

Generic Letter 91-04 dated April 2, 1991, was issued by the NRC to provide guidance to licensees for proposing changes to TS requirements for surveillance intervals to accommodate a 24 month refueling cycle. Because of the significant economic benefits associated with a longer fuel cycle, many licensees are using improved reactor fuels to extend the operating cycle between refuelings. Since the existing TS were based on an 18 month cycle, the frequency of performing surveillance that might require plant shutdown was specified at 18 months \pm 25 percent or a maximum interval of 22.5 months. Licensees were advised to evaluate the results of the performance of the surveillance tests previously performed at the 18 month interval as well as maintenance records and other performance data, to justify any requested extension of the testing interval to 24 months \pm 25 percent or a maximum interval of 30 months. In addition, Generic Letter 91-04 allows deletion of the requirements in some of the TS that the surveillance be performed during shutdown.

3.0 EVALUATION

10 CFR 50.36(c)(3) requires TS to include surveillance requirements related to test, calibration, or inspection to assure that the necessary qualification of systems and components is maintained, that operation will be within safety limits, and that the limiting conditions for operation will be met. The intent of 18-month surveillance intervals is to meet this requirement. The staff, after reviewing a number of licensee requests to extend 18-month surveillance intervals to 24-month intervals, because of longer fuel cycles, found that the effect on safety of such changes was small. Consequently on April 2, 1991, the staff issued Generic Letter 91-04 which described necessary support licensees must provide for proposed changes to TS surveillance requirements in order to accommodate a 24-month surveillance interval while still meeting the requirements of 10 CFR 50.36(c)(3).

The design, function and operation of the components and systems involved in this amendment request are unchanged. They are as described in the final Safety Evaluation Report and in the application for amendment dated June 29, 1995. The only consideration needed for each of these extensions in testing interval is an assessment of the history of the performance of these components and systems as demonstrated by the results of previous surveillance tests, corrective and preventative maintenance and other operation.

3.1 Electric Hydrogen recombiners

Surveillance activities which must be performed during shutdown are presently scheduled once per 18 months. The licensee performed a review of the electric hydrogen recombiner performance over the last four operating cycles. One failure occurred because of a loose termination to a breaker which tripped the "A" recombiner. Another failure was reported during the performance of the overall functional tests required by Surveillance Requirements 4.6.4.2.e and 4.6.4.2.f. However, this resulted from an overly restrictive acceptance criteria which was modified by License Amendment No. 63. No component degradation had actually occurred. Preventative maintenance activities are scheduled on quarterly, or at 3-year or 10-year intervals. The only significant corrective maintenance involved an oil leak on a blower. The blower was replaced during a refueling outage and, therefore, there was no impact on safety or plant operation. Based on this history, the staff finds the extension in test interval acceptable for Surveillance Requirements 4.6.4.2.b.,c.,d.,e., and f.

Another change has been proposed involving deletion of Surveillance Requirement 4.6.4.2.a. The licensee states that the above requirement is encompassed by the hydrogen recombiner functional test required by Surveillance Requirement 4.6.4.2.e which states:

Each Hydrogen Recombiner system shall be demonstrated OPERABLE at least once each refueling interval by verifying during a Hydrogen Recombiner System functional test using containment atmospheric air at an acceptable flow rate as determined in Section 4.6.4.2.f

(i.e., equivalent to 41.52 scfm at 12.47 psia and 130° F.) that the gas temperature increases to greater than or equal to 1100° F within 5 hours and is maintained for at least 4 hours.

(Note: The staff obtained a copy of Surveillance Procedure SP 3613A.1 Revision 5 and confirmed the licensee's statement.)

Since the staff has (a) previously determined that the above two recombiner functional tests may be performed in the course of one actual test (Amendments issued January 3, 1995), and (b) also previously determined that postaccident hydrogen recombiner functional test interval should coincide with refueling outages (Reference: "Improvements to Technical Specifications Surveillance Requirements" NUREG-1366, paragraph 8.5), the proposed change is acceptable. A single functional test refueling interval in conjunction with the required instrument calibrations (SR 4.6.4.2.b), heater resistance checks (SR 4.6.4.2.d), blower tests (SR 4.6.4.2.e) and visual inspections (SR 4.6.4.2.c), is sufficient to ensure operability. Therefore the deletion of TS 4.6.4.2.a is acceptable.

3.2 Auxiliary Feedwater System (AFW)

The licensee performed a review of the AFW system performance over the last four operating cycles. The turbine driven AFW pump had two recent auto-start failures. Corrective maintenance repaired these failures. However, at least quarterly, a cold start turbine driven surveillance is conducted. Therefore, extension of the refueling test would not affect the detectability of such failures. Surveillance testing of the AFW is required one per 18 months by the current TS, however there are no preventative maintenance activities scheduled on an 18-month interval. In addition, as described by the licensee in the amendment application, there are many other tests that overlap the same requirements of the surveillance testing which would assure the operability of the system. The staff, therefore, finds that the extension of the testing time interval from 18 months to 24 months for Surveillance Requirement 4.7.1.2.1.c is acceptable.

3.3 Reactor Plant Component Cooling Water System (RPCCW)

The licensee performed a review of the RPCCW system performance over the last four operating cycles. There were six tests performed on each train to ensure that each automatic valve actuated to its correct position and each pump started automatically on the appropriate signals. A failure of one valve to actuate occurred once because of a breaker trip on control power. The malfunction was repaired and successfully retested. Two valves, on different tests, gave improper indication in the control room of the valve position. However, both valves were determined to be in the correct position. All other test results were successful. Review of the preventative and corrective maintenance history of the system indicated that there was no need to maintain

an 18-month schedule and increasing to a 24-month schedule would not adversely affect the reliability of the system. Therefore, the staff concludes that the extension of the testing time interval from 18 months to 24 months for Surveillance Requirements 4.7.3.b is acceptable.

3.4 Service Water System (SWS)

The licensee performed a review of the SWS performance over the last four operating cycles. The test of the automatic valves (4.7.4.b.1) was performed five times on Train A and six times on Train B. The test of the automatic start of the pumps (4.7.4.b.2) was performed six times on both Trains. As a result of all the tests, only one valve failed. It failed because of dirty contacts on an auxiliary relay. These were cleaned and the valve was returned to service. Review of the preventative and corrective maintenance history of the system indicated that there was no need to maintain an 18-month schedule and increasing to a 24-month schedule would not adversely affect the reliability of the system. Therefore, the staff concludes that the extension of the testing time interval from 18 months to 24 months for Surveillance Requirement 4.7.4.b is acceptable.

3.5 Snubbers

Snubber testing experience at Millstone Unit 3 has shown that failure rates are not necessarily a direct function of the length of the test interval or snubber age.

The most recent industry guidelines concerning snubbers are contained in the ASME OM Code (1990), subsection ISTD, entitled, "Inservice Testing of Dynamic Restraints (Snubbers) in Light Water Reactor Power Plants." This document requires that snubber testing be performed at refueling outages, rather than at a fixed interval as presently required by the Millstone Unit 3 Technical Specifications. The functional test program in this Code standard is designed to provide a 95% confidence level that 90% to 100% of the snubber population is operable. It is essentially the same program that is contained in the proposed Millstone Unit 3 Technical Specifications. Although the OM Code is somewhat more complex with respect to failure mode grouping and corrective actions, it is less restrictive as far as additional testing which could result from test failures. Because both the ASME OM code (1990), subsection ISTD program and the proposed Millstone Unit 3 program are basically equivalent, it can be concluded that an increase in the Millstone Unit 3's snubber test interval will not significantly impact the confidence level in the reliability of the snubber population. A probabilistic risk assessment review concluded that the proposed change is not risk significant.

This determination is reinforced by the results of piping stress analyses which have been performed to assess the impact of snubbers which have failed to meet functional test acceptance criteria. The results to date have shown

that neither piping system functionality nor structural integrity have ever been compromised.

The Millstone Unit 3 Technical Specifications also require that the service life of snubbers be monitored in order to ensure the service life is not exceeded prior to the next surveillance interval. Therefore, snubber maintenance records will be reviewed on a time frame which is consistent with the 24-month operating cycle. These reviews will ensure that snubber service life will not be exceeded prior to the next scheduled review.

The staff, therefore, concludes that the extension of the testing time interval from 18 months to 24 months for Surveillance Requirement 4.7.10.e is acceptable.

3.6 Conclusion Regarding Extension of Surveillance Interval

The staff has evaluated the effect of the increase in the surveillance intervals on safety for the 18-month surveillances and has concluded that the effect is small. Historical plant maintenance and surveillance data validate this conclusion. The increase in surveillance intervals to accommodate a 24-month fuel cycle does not invalidate any assumption in the plant licensing basis. The staff finds that the proposed TS changes do not have a significant effect on safety and are, therefore, acceptable. For the reasons stated previously the proposed changes meet the requirements of 10 CFR 50.36(c)(3) and those described in GL 91-04.

3.7 Deletion of "during shutdown" from Surveillance Requirements

The phrase "during shutdown" is being deleted from Surveillance Requirements 4.7.1.2.1.c, 4.7.3.b, 4.7.4.b, and 4.7.10.e.

Because the terms "Hot shutdown" and "Cold shutdown" are defined in the Millstone Unit 3 Technical Specifications as operating modes or conditions, the added restriction to perform certain surveillances may be misinterpreted. The proposed deletion of the term "during shutdown" is consistent with the recommendation of GL 91-04.

In GL 91-04, the NRC has concluded that the Technical Specifications need not restrict surveillances as only being performed during shutdown. However, the NRC indicated that if the performance of a refueling interval surveillance during plant operation would adversely affect safety, the licensee should postpone the surveillance until the plant is shut down for refueling or in a condition or mode consistent with safe conduct of that surveillance. The staff believes that the deletion of the words "during shutdown," has no safety impact as long as the surveillances are conducted in any mode or condition without impacting the plant safety. The staff, therefore, finds that the deletion of the phrase "during shutdown" from the above identified Surveillance Requirements is acceptable.

4.0 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 comment.

5.0 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 and changes surveillance requirements. 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 citation such finding (60 FR 58402). 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 environment assessment need be prepared in connection with the issuance of the amendment.

6.0 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 to 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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