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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

SCHEDULING OF TYPE A INTEGRATED LEAKAGE RATE TESTS

Introduction

By letter dated November 6, 1985, Northeast Nuclear Energy Company (NNECO, the licensee) submitted its proposed schedule for the next three containment integrated leak rate tests (CILRTs). This safety evaluation evaluates the acceptability of the licensee's proposed schedule.

The schedule was submitted pursuant to Section III.A.6(a) of 10 CFR Part 50, Appendix J, which requires Commission approval if any periodic Type A test fails to meet the applicable acceptance criteria. The "As-Found" Type A test performed June 1985 did not meet the acceptance criteria as a result of leakage through containment isolation valves (Type C test leakage) and containment penetrations (Type B test leakage). The letter also documented the results and a licensee evaluation of the 1985 test failure and a subsequent licensee commitment on the maintenance activities on selected containment isolation valves (CIVs). These valves have a history of high leakage.

The Type A test performed in December 1983 demonstrated a high overall containment leakage due also to large Type B and C leakage. The licensee has indicated that the high Type B and C leakage rates resulted in the "As-Found" failure of the June 1985 CILRT.

Background

The licensee considers the failure of the June 1985 "As-Found" Type A test directly attributable to the high Type B and C leakages. The "As-Found" condition was determined using the guidelines provided in IE Information Notice 85-71. This notice stipulates that the difference between "As-Found" and "As-Left" LLRT results for containment isolation boundaries be added to the results of a Type A test in an "As-Left" condition. This method establishes the total containment integrated leak rate for the previous cycle.

Prior to the issuance of IE Information Notice 85-71, the method of determining an "As-Found" leakage was not clearly established for containments tested in an "As-Left" condition. The Millstone Unit 2, December 1983 Type A test would be considered a failure if the "As-Found" containment leakage is calculated per IE Information Notice 85-71. This would mean that the Millstone Unit 2 containment failed two consecutive Type A tests and would be subject to the

criteria in Section III.A.6(b) of 10 CFR Part 50, Appendix J, which reads in part: "If two consecutive periodic Type A tests fail to meet the applicable acceptance criteria ... a Type A test shall be performed at each plant shutdown for refueling ... until two consecutive Type A tests meet the acceptance criteria." The NRC may, however, forego the preceding criteria if the following conditions (stated also in IE Information Notice 85-71) apply: If Type B and C leakage rates constitute an identified contributor to this failure (meaning any "As-Found" Type A test) the general purpose of maintaining a high degree of containment integrity might be better served through an improved maintenance and testing program for containment penetration boundaries and isolation valves. In this situation, the licensee may submit a corrective action plan with an alternative leakage test program proposal for NRC staff review. If this submittal is approved by the NRC staff, the licensee may implement the corrective action and alternative leakage test program in lieu of the required increase in Type A test frequency incurred after the failure of two successive Type A tests.

The proposed schedule of the next set of three Type A tests presented in NNECO's November 6, 1985 letter specifies that a Type A test be performed every other refueling outage beginning March 1988. The first test would be performed in March 1988, the second in January 1991, and the third in March 1995. This is the Type A test frequency the licensee would follow had both the June 1985 and December 1983 tests not failed. NRC Region I requested a meeting with NNECO representatives to discuss the proposed schedule for subsequent Type A tests and future licensee action to assure containment integrity. A meeting was held at Region I on June 4, 1986 in which the licensee presented several corrective and preventive measures to restore overall leakage to 10 CFR Part 50, Appendix J, limits and maintain containment integrity in the future.

Evaluation

1. Corrective Measures

The licensee provided test data showing that penetration and valve leakage rates for the 1983 through 1985 period exceeded the allowable leakage. The cause of this leakage was traced to certain valves that have excessive seat leakage. The problem valves are Fisher butterfly valves having T-ring resilient type seats and two Masoneilan globe valves used in the containment sump.

The Fisher butterfly valve T-ring seats are adjustable to provide for wear and leak tightness of the seat, and also are replaceable. The licensee isolated the major cause of the leakage at the butterfly valve seats to the resilient T-ring gaskets or their adjustment. Previously, the resilient T-ring seats were only replaced when a problem with a specific valve was identified and no preventive measures were taken. The licensee is initiating a preventive maintenance program which includes replacing all of the resilient T-ring gaskets during the next refueling outage (fall 1986).

Subsequently, they will replace one-half of the valve seats each refueling outage. Additionally, NNECO will change the seats such that for those penetrations with two valves in series, one of two valves will have its seat changed at each outage so that each penetration will have at least one valve with a new seat at the beginning of each cycle. This will be done wherever practical.

The two Masoneilan globe valves have experienced seat leakage resulting from sump debris collecting in the valve's seat area. The licensee is investigating possible methods, including either traps or screens, to prevent debris from entering the sump and valves. The investigation will be completed prior to the upcoming refueling outage and, if possible, the corrective action will be taken during that outage.

Attachment A lists the valves discussed above. Those in group 1 are the butterfly valves that will have their seats replaced periodically. The two valves in group 2 are the globe valves under investigation.

2. Technical and Administrative Control for Containment Integrity

The licensee has identified the root cause of the leakage problem and developed definitive measures to correct the valve leakage problems. The licensee has concluded that the proposed preventive and corrective programs are technically adequate to assure the containment integrity. Administrative control measures were implemented in a station administrative procedure NEO 2.20, which includes leakage limits on individual valves and QA surveillance requirements.

3. Technical basis for not conducting a Type A test at the upcoming refueling outage in consideration of the 1983 and 1985 test deficiencies.

The licensee identified the containment leakage problem as primarily confined to specific penetration/valve leakages. They can be appropriately handled by the local leak rate testing (LLRT) program as opposed to the CILRT program. An LLRT of these valves will be conducted during the upcoming 1986 outage. The licensee's conclusion was that an ILRT at the upcoming outage was not necessary since their leakage problem can be handled by the local leak rate testing and preventive maintenance program, as proposed under item 1 above.

4. Type B and C Test Results: 1986 Outage

The licensee agreed to notify Region I of any Type B and Type C outlier testing results that are identified during the 1986 fall outage. The licensee also agreed to make available for staff review the Types B and C test data 2 weeks before startup from the next refueling outage.

Conclusion

The staff concludes, based on the considerations discussed above, that: (1) there is reasonable assurance that containment integrity can be restored and maintained in the proposed manner; and (2) the NNECO Type A test schedule proposed in their November 6, 1985 letter to the NRC is acceptable contingent upon acceptable Type B and C test results in the future and implementation of the proposed preventive maintenance programs.

References

1) NNECO letter to USNRC "Millstone Nuclear Power Station, Unit No. 2 Scheduling of Type A Integrated Leakage Rate Tests" dated November 6, 1985.

2) NNECO letter to USNRC "Millstone Nuclear Power Station, Unit No. 2, 10 CFR 50 Appendix J Testing" dated June 18, 1986.

3) Millstone Point Unit 2 LER No. 85-003-01, "Containment Local Leak Rate Limits Exceeded".

4) Millstone Point Unit 2 LER No. 84-005-01, "Containment Local Leak Rate Limits Exceeded".

5) June 4, 1986 meeting minutes regarding the proposed NNECO schedule for the Millstone 2 Integrated Leak Rate Test.

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Attachment A

Group 1

Penetration	Valve	System	Type		
25/30	2-RB-28-1D	RBCCW	10"	Fisher	Butterfly
25/30	2-RB-28-2D	"	5"	"	"
25/30	2-RB-28-3D	"	10"	"	"
26/31	2-RB-28-1B	"	10"	"	"
26/31	2-RB-28-2B	"	6"	"	"
26/31	2-RB-28-3B	"	10"	"	"
27/32	2-RB-28-1A	"	10"	"	"
27/32	2-RB-28-2A	"	6"	"	"
27/32	2-RB-28-3A	"	10"	"	"
28/33	2-RB-28-1C	"	10"	"	"
28/33	2-RB-28-2C	"	4"	"	"
28/33	2-RB-28-3C	"	10"	"	"
39	1-AC-4	CMT Purge	48"	"	"
39	2-AC-5	"	48"	"	"
40	2-AC-6	"	48"	"	"
40	2-AC-7	"	48"	"	"
82	2-EB-91	Hyd. Purge	6"	"	"
82	2-EB-92	"	6"	"	"
83	2-EB-99	"	6"	"	"
83	2-EB-100	"	6"	"	"

Group 2

14	2-SSP-16.1	CMT.Sump	3"	Masoneilan Globe
14	2-SSP-16.2	CMT.Sump	3"	Masoneilan Globe