

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY
INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS
LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED
BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN
ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (IT-
6-33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC
20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104),
OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Millstone Nuclear Power Station Unit 1

DOCKET NUMBER (2)

05000245

PAGE (3)

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TITLE (4)

Feedwater System Configuration does not Allow Complete Draining for an Acceptable LLRT

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	21	96	96	026	01	12	16	96	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		000	20.2201(b)		20.2203(a)(2)(v)		<input checked="" type="checkbox"/> 50.73(a)(2)(i)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(ii)		50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		<input type="checkbox"/> 50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)		50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME	Robert W. Walpole, MP1 Nuclear Licensing Manager	TELEPHONE NUMBER (Include Area Code)	(860)440-2191
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
A	SJ	ISV	A391	N					
A	SB	ISV		N					

SUPPLEMENTAL REPORT EXPECTED (14)

<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input type="checkbox"/> NO	EXPECTED SUBMISSION	MONTH	DAY	YEAR
			12	01	97

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 21, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, it was determined that three containment penetrations have not received an acceptable 10CFR50 Appendix J, Type C test. The system configuration does not allow adequate draining of water to allow the containment isolation valves (CIVs) to be exposed to pressurized air during the local leak rate test (LLRT). Appendix J of 10CFR50 requires that "valves, unless pressurized with fluid ... from a seal system, shall be pressurized with air or nitrogen at a pressure of Pa." The LLRT for these three penetrations, therefore, has not been performed in accordance with the requirements of 10CFR50 Appendix J.

The failure to perform Type C leakage test in accordance with the requirements of 10CFR50 Appendix J results in the inability to adequately demonstrate primary containment integrity through the Type B and C program, as required by Millstone Unit No. 1 Technical Specification 3.7.A.3. The improper testing of the feedwater penetrations also potentially invalidated each integrated leak rate test (ILRT) since 1976. This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

There were no adverse safety consequences as a result of this event.

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however, allows adequate system draining capability. In either case, the valves were not directly or totally tested with air, as required by 10CFR50 Appendix J.

The failure to adequately perform Type C testing on these three penetrations calls into question our ability to demonstrate the operability of the primary containment during the past operating cycles. It is possible that these penetrations would have exhibited unacceptable leakage in the event of an accident requiring a containment isolation. Since the individual penetration valves were not subjected to an air test, the results of the tests performed may not accurately reflect the true valve leak rates. Reviews during the Millstone Unit No. 1's on-going self-assessment revealed that the ILRTs performed since 1976 have not included the leakage from the feedwater penetration leakage paths as required by 10CFR50 Appendix J (the Main Steam Line Drain penetration had suitable vent and drain provisions for the ILRT). The failure to vent and drain the feedwater penetration for the ILRT, and the inability to include valid LLRT penalty factors for these penetrations due to invalid LLRT results has caused each assessment of overall containment integrity based in ILRT results since 1976 to be potentially invalid.

The failure to perform Type C leakage test in accordance with the requirements of 10CFR50 Appendix J results in the inability to adequately demonstrate primary containment integrity, both through the Type C testing program and the Type A test, as required by Millstone Unit No. 1 Technical Specification 3.7.A.3. This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

There were no safety consequences as a result of this event. The feedwater system has redundant and independent check valves in each train and have exhibited some degree of leak-tightness. While the valves were not tested using pressurized air or nitrogen, as required by 10CFR50 Appendix J, they were subjected to periodic leak tests. During these tests, the inboard valve seats were completely submerged under water and the outboard valve seats were partially submerged. The inboard valves have shown to be leak tight when tested with water at test pressure. Although there is no correlation to convert measured leakage from water test to actual air leakage rates, which is the reason water leakage rates can not be used to satisfy 10CFR50 Appendix J requirements, leakage test using water will identify a leaking seat, particularly if the leakage rate is significant. This was demonstrated both in 1991 and 1994 when the 1-FW-SA "as-found" leakage rate using the water test method exceeded the administrative limit of 18.8 scfh (in 1991 it was 83.5 scfh and in 1994 it was 268.88 scfh). In both cases, the post repair Type C test results demonstrated the effectiveness of the repair in that the post repair leakage rates were virtually zero (0.03 scfh). Thus, although the "as-found" tests were considered invalid, the post maintenance "as-left" Type C tests for this valve were in conformance with 10CFR50 Appendix J, and any Type C penalty would have had a negligible impact on the "as-left" ILRT.

IV. Corrective Action

Paragraph III.A.6.(b) of 10 CFR 50 Appendix J requires that when two consecutive periodic Type A tests fail, it is required to increase the Type A test frequency until two consecutive Type A tests meet the acceptance criteria. However, Information Notice (IN) 85-71 states that when the Type C test is an identified contributor to the failed Type A test, maintaining a high degree of containment integrity is better served through an improved maintenance and testing program for containment penetration boundaries and

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I. Description of Event

On March 21, 1996, with the plant shutdown and the reactor in the COLD SHUTDOWN condition, it was determined that three containment penetrations have not received an acceptable 10CFR50 Appendix J, Type C test. The system configuration does not allow adequate draining of water to allow the containment isolation valves (CIVs) to be exposed to pressurized air during the local leak rate test (LLRT). Appendix J of 10CFR50 requires that "valves, unless pressurized with fluid ... from a seal system, shall be pressurized with air or nitrogen at a pressure of Pa." The LLRT for these three penetrations, therefore, has not been performed in accordance with the requirements of 10CFR50 Appendix J.

The failure to perform Type C leakage test in accordance with the requirements of 10CFR50 Appendix J results in the inability to adequately demonstrate primary containment integrity through the Type B and C program, as required by Millstone Unit No. 1 Technical Specification 3.7.A.3. The improper testing of the feedwater penetrations also potentially invalidated each integrated leak rate test (ILRT) since 1976. This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications.

II. Cause of Event

The cause of this event is personnel error, in that the "as-built" system piping configuration was not identified as needing modifications when the 10CFR50 Appendix J criteria were implemented at Millstone Unit No. 1. Construction of Millstone Unit No. 1 and the plant's initial criticality pre-date 10CFR50 Appendix J. Additionally, during replacement of the feedwater check valves to a soft seat design, the design change failed to incorporate the drain connections downstream of each check valve. Program and procedure changes and reviews also failed to identify this problem.

III. Analysis of Event

The feedwater system penetrations X-9A and X-9B each contain two check valves in series, one inside containment (1-FW-10A/B) and one outside containment (1-FW-9A/B). The valves are local leak rate tested separately, and a differential pressure is applied across each valve. The inboard drain connection, however, is located several feet above the valve seating surface. Hence, the very nature of the check valve prohibits water from being drained from the system lines to expose the seating surface of the valve to the air test medium. Pressurization of the valve seating surface with air (or nitrogen), per the requirements of 10CFR50 Appendix J, has not been achieved. The outboard check valves (1-FW-9A/B) have horizontal drain penetrations which allow partial drainage of the system lines, exposing approximately half of the valve seating surface for the air test. In both cases, the valves were not directly or totally tested with air, as required by 10CFR50 Appendix J.

The main steam system penetration X-8 contains two motor operated valves in series, one inside containment (1-MS-5) and one outside containment (1-MS-6). The piping configuration, however, does not allow adequate draining of the system lines since the normal procedural drain path is well above the level of both valves, enroute to the condenser. Pressurization of the valve seating surface with air (or nitrogen), per the requirements of 10CFR50 Appendix J, has not been achieved. An alternate drain path does exist through the main steam drain level switch, which is at the same level as the test valves. Neither path,

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isolation valves. In such cases, IN 85-71 states that a Corrective Action Plan (CAP), with an exemption request, may be submitted for the NRC Staff's approval. Accordingly, NNECO will determine if the penetrations have resulted in two consecutive ILRT failures and, if required, develop and submit a CAP prior to startup for operating cycle 16, in conjunction with an exemption request, to propose an alternative leakage test program to monitor the Type C test performance for penetrations X-8, X-9A and X-9B in lieu of two consecutive ILRTs. The CAP will address the penetration discrepancies associated with these three penetrations by implementing modifications to properly vent, drain, and perform Type C test on these penetrations.

Modifications will be made to the current configuration to ensure appropriate draining of the three penetrations. A local leak rate test on the three penetrations will be performed when the modifications are complete, and the test results will be provided to the Staff in a supplement to this report. NNECO expects to supplement this LER before startup for operating cycle 16. The test results will also be evaluated to ensure that no other adverse conditions were created.

NNECO will conduct a Type A test subsequent to the modifications to these penetrations prior to startup for operating cycle 16.

NNECO will modify the Type A test procedure to specify those systems which are not vented and drained during the Type A test. Systems that are not vented or drained during the Type A test which could become exposed to the containment atmosphere during a design basis accident shall be Type C tested and the Type C "as-left" minimum pathway leakage rate shall be added to the Type A test leakage rate. A valid minimum pathway leakage rate from the Type C test shall be applied to the Type A test per the requirements of 10 CFR 50 Appendix J.

Additionally, NNECO will review all Appendix J system configurations and procedures to identify piping configurations which preclude the ability to conduct adequate Appendix J Type C testing. This review and any required modifications will be completed prior to startup for operating cycle 16.

Additional corrective actions as discussed in LER 96-046, "Feedwater System Configuration does not Allow Complete Draining for an Acceptable LLRT," that are applicable to this LER are:

LER 96-046 corrective action section stated that the Appendix J program self-assessment is ongoing. Any additional discrepancies which affect the LLRT will be included in a supplement to LER 96-046. In addition, it will be investigated as to whether any of the issues would have impacted the ILRTs. This self-assessment will be completed and the final results reported to the NRC via a supplement to LER 96-046.

LER 96-046-00 also stated that the qualifications and experience of the individual currently responsible for the Millstone Unit No. 1 Appendix J program has been reviewed and has been verified to be satisfactory. The individuals responsible for Appendix J are now part of the Condition Based Maintenance (CBM) group. The CBM group has been organized to include personnel from the same discipline to work together across all units on areas such as the Appendix J program. The Appendix J group, as part of the CBM, now reports to one manager. Therefore, the individuals are able to establish uniformity among the Appendix J programs and specialize in the area of leak rate testing.

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V. Additional Information

Similar Events

LER 96-046 "Failure to Perform Applicable 10CFR50 Appendix J Tests to Satisfy Technical Specifications"
Several containment penetrations did not have adequate LLRTs performed pursuant to the requirements of 10CFR50 Appendix J. The cause of this event is personnel error, in that the "as-built" systems and equipment configuration were not identified as needing modification when the 10CFR50 Appendix J criteria were implemented at Millstone Unit No. 1.

Manufacturer Data

None.