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SUBJECT: LER 89-004-00:on 890227,inadequate testing of containment isolation valves due to leak testing method.
W/8 ltr.

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NRC Form 366
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U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Kewaunee Nuclear Power Plant	0 5 0 0 0 3 0 5	1 OF 0 6

TITLE (4) Leak Testing Method Not In Accordance With 10 CFR 50 Appendix J Results In Inadequate Testing Of Containment Isolation Valves

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR		SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
											0 5 0 0 0
0 2	2 7	8 9	8 9	–	0 0 4	– 0 0	0 3	2 9	8 9		0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
David S. Nalepka - Plant Licensing Supervisor	AREA CODE 4 1 4 3 8 8 - 2 5 6 1 0

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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO	NA			

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On February 27, 1989, with the plant in a refueling shutdown, a concern regarding the leak test methods of a containment penetration providing nitrogen gas to the safety injection accumulators was identified. The penetration isolation boundary includes three containment isolation valves (NG-110, NG-108A and NG-108B) located inside the containment and one valve (NG-107) located outside the containment.

Valves NG-108A and NG-108B are not tested and pressurized in the same direction as that when the valves are required to perform their safety function. Due to the orientation of valves NG-108A and NG-108B, the test method is non-conservative and is in conflict with 10 CFR 50, Appendix J. Valve NG-107 is normally closed and successfully passed its leakage test and was capable of isolating the penetration as necessary.

The short term solution will include developing and implementing a test method during the current refueling outage which will enable testing of valves NG-108A and NG-108B in accordance with 10 CFR 50 Appendix J utilizing existing system configurations. In addition a design change will be initiated to modify the nitrogen supply line to the accumulators. This will enable future testing with methods consistent with those currently used on other penetrations.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Nuclear Power Plant	0 5 0 0 0 3 0 5	8 9	0 0 4	0 0	0 2 OF 0 6

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Event

On February 27, 1989 with the plant in a refueling shutdown, a concern regarding the leak test methods of a containment penetration was identified. As a result of a previously conducted Technical Review of the Kewaunee Plant's Local Leak Rate Testing (LLRT) program, by Wisconsin Public Service personnel, it was determined that a physical inspection of several containment penetrations should be performed. The intent of the inspection was to ensure that the current leak test methods meet the requirements of 10 CFR 50 Appendix J.

Specifically the inspections were to be performed on those valves where the penetration test method does not pressurize the valve in the same direction as that when the valve is required to perform its safety function. Upon inspecting the orientation of two valves (NG-108A and NG-108B) on February 27, 1989 it was determined that the test method used on these valves appears to be in conflict with 10 CFR 50 Appendix J.

Penetration #31 is a containment penetration that provides nitrogen cover gas to the safety injection accumulators [ACC] in containment. The outside containment valve [ISV] NG-1D7 and the inside containment valves NG-108A, NG-108B, and NG-110 provide the isolation boundaries for this penetration (see Figure 1).

The current testing method utilized in procedure SP 56A-09D, "Containment Local Leak Rate Type B and C Test", requires pressurizing between the containment isolation valves and monitoring for leakage. NG-107 is pressurized in the same direction as that when the valve is required to perform its safety function (containment isolation) therefore it is acceptable. Valves NG-110, NG-108A, and NG-108B are not tested and pressurized in the same direction as that when the valves are required to perform their safety function (see Figure 1).

The testing of a containment isolation valve in a direction different than required to perform its safety function is acceptable if it can be proven to be an equivalent or more conservative test.

Cause of Event

The root cause of the problem was the failure to adequately evaluate the orientation of valves NG-10BA and NG-108B when developing the test procedure and associated Technical Specifications. The current Type C test method applies pressure from above and across the plug on these globe valves (see Figure 2). If these valves were required to perform a containment isolation function the containment pressure would be applied to the bottom of the plug. The current test method provides pressure above the plug which assists the valve in closing and thus limits leakage. This is a non-conservative test and therefore does not comply with 10 CFR 50 Appendix J test requirements.

NG-110 is not pressurized in the same direction as that when the valve would be required to perform its safety function. However, the valve orientation is such that this test method provides equivalent or conservative results and therefore it is acceptable.

Analysis of Event

1D CFR 50, Appendix J Section II.C.1 states that, "Type C tests shall be performed by local pressurization. The pressure shall be applied in the same direction as that when the valve would be required to perform its safety function, unless it can be determined that the results from the tests for a pressure applied in a different direction will provide equivalent or more conservative results." Testing performed on valves NG-108A and NG-108B is not being performed in strict accordance with 1D CFR 50, Appendix J.

Valve NG-107 which was leak tested successfully will automatically close on a containment isolation signal. Even though NG-108A and NG-108B are not tested in the direction required by 10 CFR 50 Appendix J the test method currently used provides reasonable assurance that gross leakage through the valves does not exist.

Valves NG-1D7, NG-108A, NG-108B, and NG-110 are normally closed during conditions where containment integrity is required. Safety injection system prestartup checklist (N-SI-33-CL) ensures that these valves are closed. Valves NG-107 and NG-108A(B) are opened only if the nitrogen pressure in the accumulators is outside the normal operating band. The nitrogen pressure is then either relieved or increased to restore the accumulator pressure to a nominal 750 psig. The accumulators historically experience minimal leakage and the need to add nitrogen to maintain pressure occurs infrequently. Should a transient occur requiring containment isolation when any of these valves are open for an accumulator pressure adjustment, NG-107 would automatically close on a containment isolation signal.

Based on the fact that NG-107 is normally closed and has successfully passed its leakage test, containment integrity is maintained as required even if valves NG-108A and NG-1088 are assumed to have questionable leak tightness. During the infrequent and short duration periods in which these valves are opened, valve NG-107 provides the capability to automatically isolate the penetrations as necessary.

The failure to perform the leakage test in accordance with the provisions of 10 CFR 50 Appendix J is a violation of the intent of Technical Specification 4.4.b and is being reported as a condition prohibited by the plant's Technical Specifications in accordance with 10 CFR 50.73(a)(2)(i)(B).

Corrective Actions

1. A test method will be developed in the short term which will enable testing of valves NG-108A and NG-108B in accordance with 10 CFR 50 Appendix J utilizing existing system configurations. This test method utilizing pressurized safety injection accumulators will be implemented during the 1989 outage (currently in progress), however, this method is not the preferred long term solution.

2. The long term solution will require that the nitrogen supply line to the accumulators be modified to enable leakage testing in accordance with 10 CFR 50, Appendix J using methods consistent with those currently used on other penetrations. A Design Change will be initiated to accomplish this by either:

   a. medifying piping and installing valves necessary to enable testing of valves NG-108A and NG-108B in the same direction as that when the valve would be required to perform its safety function; or

   b. adding a new valve, possibly a check valve, on the nitrogen gas line inside containment near the penetration. Proper Appendix J testing of the valves would then be possible utilizing the existing valves and piping. This option would enable valves NG-1D8A and NG-108B to be reclassified as non-containment isolation valves.

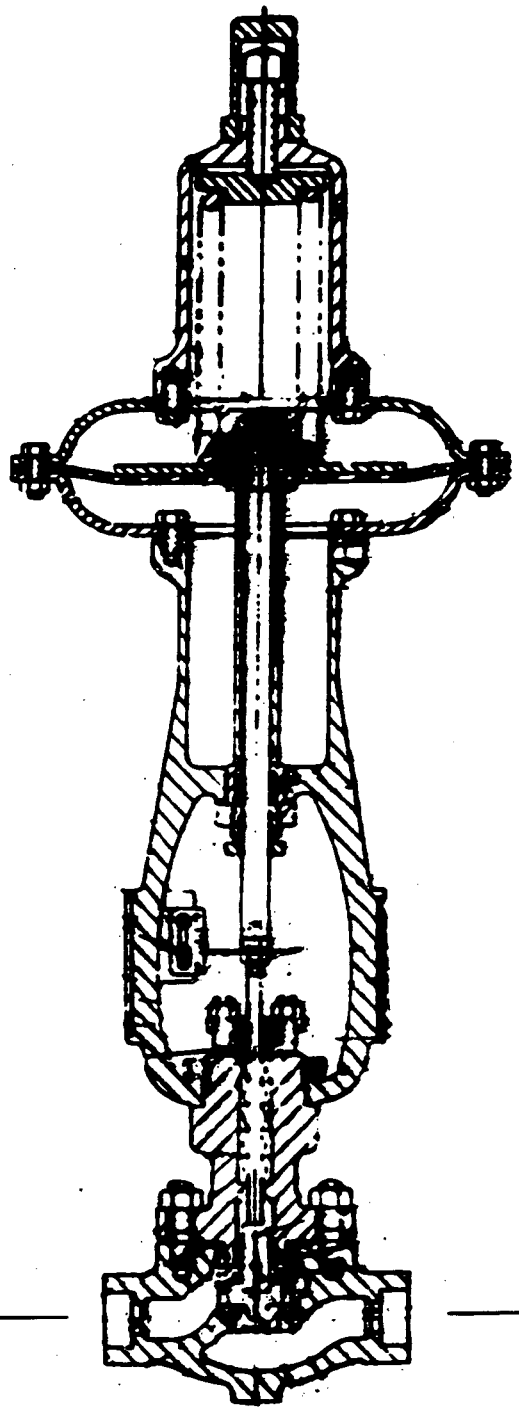

Figure 2

Valves NG-108A(B)

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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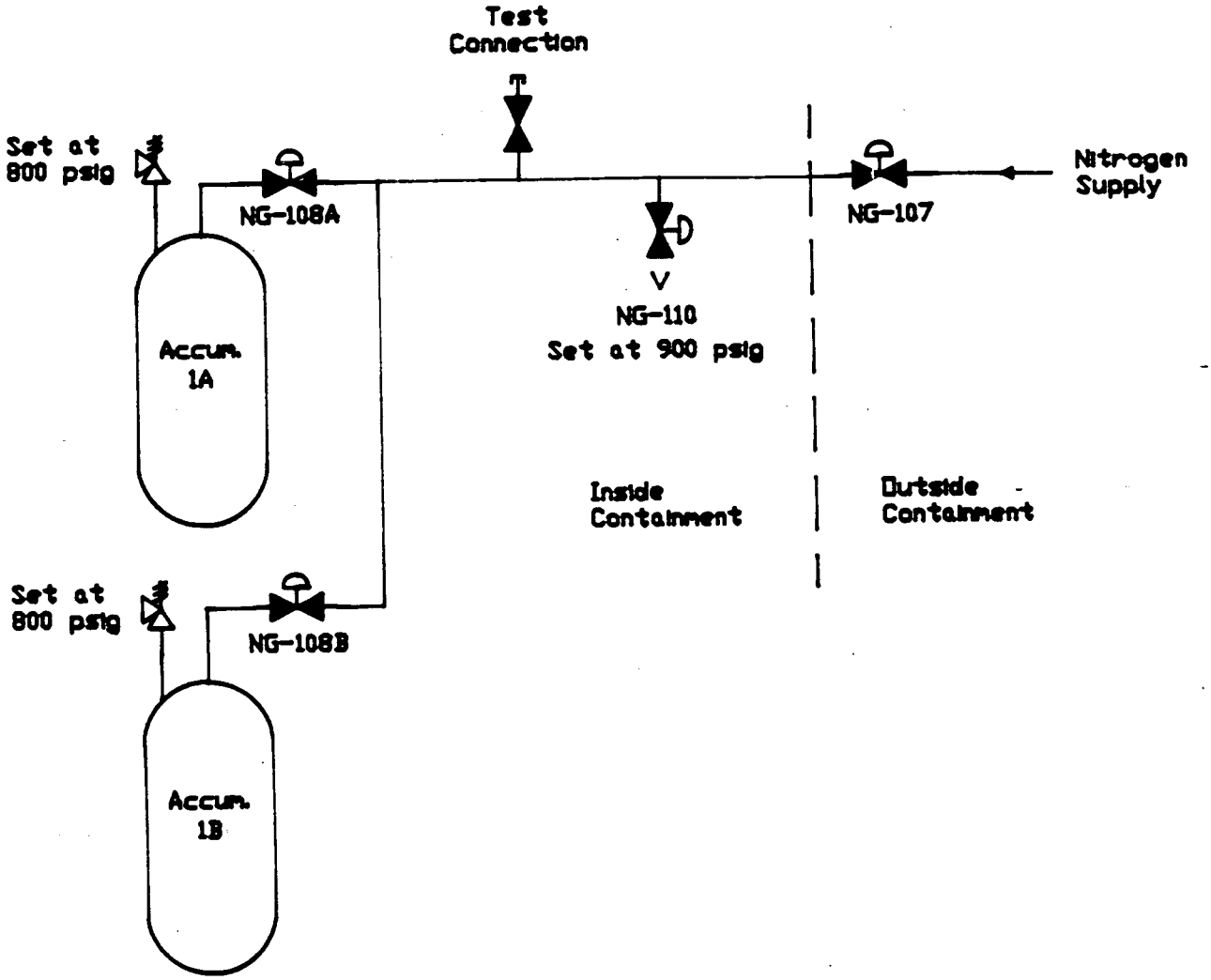

Figure 1

Penetration #31

Nitrogen Supply to SI Accumulators

WPSC (414) 433-1598
TELECOPIER (414) 433-1297

WISCONSIN PUBLIC SERVICE CORPORATION
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March 29, 1989

10 CFR 50.73

U. S. Nuclear Regulatory Commission
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Washington, D.C. 20555

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reportable Occurrence 89-004-00

The attached Licensee Event Report for reportable occurrence 89-004-00 is being submitted in accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System."

Sincerely,

C. R. Steinhardt
Manager - Nuclear Power

SLB/jms

Attach.

cc - INPO Records Center
Mr. Robert Nelson
US NRC, Region III

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1/1