



NRC-99-079

**Wisconsin Public Service Corporation**  
(a subsidiary of WPS Resources Corporation)  
Kewaunee Nuclear Power Plant  
North 490, Highway 42  
Kewaunee, WI 54216-9511  
920-388-2560

November 5, 1999

10 CFR 50.73

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Reportable Occurrence 1999-004-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 1999-004-00 is being submitted.

Sincerely,

A handwritten signature in cursive script that reads "M Marchi".

Mark L. Marchi  
Vice President-Nuclear

GIH

Attach.

cc - INPO Records Center  
US NRC Senior Resident Inspector  
US NRC, Region III

Handwritten initials "IE22" in a stylized, bold font.

**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 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4)  
Contrary to TS Requirements Non-Automatic Containment Isolation Valves Have Been Opened for Testing

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 NAME	DOCKET NUMBER
10	06	1999	1999	-- 004	-- 00	11	05	1999		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
N				X	
		20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Gary I Harrington - Engineering & Technical Support	(920) 388-8559

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

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

On October 6, 1999, while the plant was operating at full power, it was identified that contrary to Technical Specifications (TS) requirements, non-automatic containment isolation valves were being opened for routine testing and testing following maintenance. Kewaunee TS defines containment integrity to exist, in part, when, "the nonautomatic Containment System isolation valves and blind flanges are closed as required." This statement is interpreted to mean that non-automatic isolation valves can not be opened unless there is a specific license requirement to do so. Twelve such valves are listed in Kewaunee's in-service test (IST) program plan as valves important enough to be tested in accordance with IST requirements. These valves are noted as being outside the scope of ASME Section XI IST testing requirements. Consequently, IST testing requirements do not apply to these valves. When IST testing of the subject valves began in 1977, they were considered to be within the scope of Section XI testing requirements. Subsequent revisions to the Code and understanding of the valves' status resulted in reclassifying the valves as outside the scope of IST testing. The plan was revised in 1993 to note the change in status. However, the valves were felt to be important enough to remain in the IST plan and testing continued. The cause is attributed to a more conservative understanding of the TS today than there would have been when the status of the valves changed. There were no safety consequences to operating the valves. The valves were only operated individually with their redundant in-series isolation valve closed.

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DESCRIPTION OF EVENT

On October 6, 1999, while the plant was operating at full power, it was identified that contrary to Technical Specifications (TS) requirements, non-automatic containment isolation valves [V] were being opened for routine testing and testing following maintenance. Kewaunee TS defines containment integrity to exist, in part, when, "the nonautomatic Containment System isolation valves and blind flanges are closed as required." This statement is interpreted to mean that non-automatic isolation valves can not be opened unless there is a specific license requirement to allow opening the valves. Twelve such valves are listed in Kewaunee's in-service test (IST) program plan as valves important enough to be tested in accordance with IST requirements. The valves are noted to be outside the scope of American Society of Mechanical Engineers (ASME), Section XI, IST requirements. Therefore, the valves are tested as a preventive measure above and beyond code requirements. IST testing requirements do not specifically apply to these valves.

Of the twelve valves, four have an automatic closure circuit when controls are switched to their normal control room control circuit. However, when the valves are tested according to the IST program, they are tested using control switches located at a local control station [PL] outside the control room. When the valves are in local control, the automatic control signal circuits are removed from the valves control system. As a result, they become, in effect, non-automatic containment isolation [JM] valves and should remain closed to be consistent with TS requirements when selected to local control.

While reviewing the maintenance schedule for the week of October 11, it was noted that a containment isolation valve was scheduled for maintenance and testing. The valve, SA-7003A, is a remotely operated valve located outside the containment [NH] structure in the shield building annulus. It is a one-quarter-turn motor operated ball valve. It is used for post-accident hydrogen control and receives no automatic signals for fulfilling its design basis function. Maintenance on the valve was questioned due to its being a containment isolation valve and having to be cycled

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for testing. A review of Kewaunee's TS did not find any explicit license requirement for cycling the valve, nor was there an explicit statement allowing the valve to be open at power. Therefore, the maintenance activity was cancelled.

Initially, as part of the investigation into why the maintenance was scheduled, it was noted that a number of non-automatic valves (eight including SA-7003A) have been periodically operated in accordance with the Kewaunee IST plan. Subsequent record reviews revealed that prior to 1993, all the valves were understood to be within the scope of ASME, Section XI, IST requirements. Further reviews of the procedure used to perform the tests revealed that the four valves that receive an automatic closure signal were being tested from the local control panel.

In addition to testing according to the IST plan, there have been occasions where one or more of the subject valves had been cycled following maintenance. Cycling the valve following maintenance is performed in accordance with the surveillance procedure to demonstrate operability. The post-maintenance tests had been performed at a time when containment integrity was required.

The twelve valves are in the post LOCA hydrogen control and monitoring system [BB] and are cycled in accordance with Surveillance Procedure (SP) 55-167-4, "Post LOCA Valves Timing Test (IST)."

CAUSE OF THE EVENT

Kewaunee's system for addressing post-accident hydrogen monitoring and mitigation includes two trains, A and B, of piping and valves that penetrate the containment. Included in the design are six remotely operated valves in each train. Four of the valves in train B receive automatic closure signals when their controls are aligned to the control room control panel. The remaining

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eight valves can only be operated from a local control panel. All of the valves are listed in Kewaunee's Updated Safety Analysis Report (USAR) as containment isolation valves.

In 1977 the original system design had only four remote operated valves in the hydrogen control system design. The original design did not have any automatic closure signals. Modifications to the system to comply with post-TMI regulatory requirements in the early 1980s increased the number of valves to 12, four of which had automatic isolation signals added to facilitate on-line containment venting. Containment venting is performed from the control room. Until 1993 the valves in the system had been considered to be within the scope of ASME Section XI IST testing requirements. Records indicate that valve tests according to ASME Section XI have been performed since 1977. Late in 1993 the status of the valves was determined to be different.

Apparently code changes and/or different interpretations of the code resulted in a change in the status of the valves in question. In December 1999, the Kewaunee IST plan was revised. Kewaunee's IST plan includes a tabular listing of valves included in the plan. One of the table's columns is the valve's ASME code class. The previous version of the plan, Revision K, had the subject valves classified as ASME Class 2, Category A. The revised version, Revision L, has the valves' class signified by a note, Note 4B, in the plan's table. Note 4B states, "[t]his component is outside of the ASME Section XI Code Class 1, 2 and 3 boundary, however, since the operation of this component has been determined to be important, the component has been included in the program. The component will be tested as shown." The table indicates operational testing on a quarterly basis, and leak testing every refueling cycle.

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As noted above, Kewaunee's containment integrity definition, in part, states all non-automatic isolation valves are closed as required. Implicit in this statement is that unless there is a requirement for a non-automatic valve to be opened, it should remain closed whenever containment integrity is required. The cause of this event is attributed to increased sensitivity to the literal TS meaning.

ANALYSIS OF THE EVENT

This event is being reported under 10CFR50.73(a)(2)(i)(B), "any event or condition prohibited by the plant's Technical Specifications." Kewaunee TS, Section 3.6, "Containment" requires, in part, that, "CONTAINMENT SYSTEM INTEGRITY shall not be violated if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied: 1. The reactor is in the COLD SHUTDOWN condition with the reactor head installed, or 2. The reactor is in the REFUELING shutdown condition. TS goes further to state that, "ALL of the following conditions shall be satisfied whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required." As indicated earlier, TS defines integrity to exist, in part, when non-automatic isolation valves are closed as required. This part of the TS definition is understood to mean that unless there is an explicit license requirement or allowance to open the valves, the non-automatic isolation valves are required to remain closed. Consequently, opening the valves at a plant condition where containment integrity is required constitutes a violation of TS requirements. Kewaunee currently has no specific TS limiting conditions for operation (LCOs) for containment integrity associated with containment penetrations and/or isolation valves.

The significance of this event is minimal. According to procedure, whenever the valves are cycled they are cycled individually. This means that at any given time when one non-automatic isolation valve in a containment penetration was opened for testing, the redundant isolation valve was closed. Additionally, opening a single isolation valve in effect makes the valve inoperable. In

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accordance with Kewaunee's TS for automatic isolation valves, if one is found to be inoperable, manual action is required to establish compensatory containment isolation capability. Consequently, the action of cycling a non-automatic valve for periodic testing or for testing following maintenance, poses no greater challenge to public health and safety than already allowed by the TS.

**CORRECTIVE ACTIONS**

Corrective actions taken in the short term were:

- Maintenance activities associated with SA-7003A were immediately halted.
- Administrative actions were instituted to preclude the use of SP 55-167-4 and the maintenance procedures on non-automatic containment isolation valves.
- Members of Management and Supervisory staff were made aware of the issue and requested to review their respective group activities for similar activities (none were reported).

Additional corrective actions consisted of reviewing Nuclear Regulatory Commission (NRC) and Wisconsin Public Service Corporation (WPSC) correspondence. The correspondence reviewed was associated with NUREG-0737, "Post-TMI Requirements." The objective was to determine if any requirements other than IST existed that would support the need to test the valves in question. Although the requirements for fulfilling the NUREG indicated that some form of testing of TMI related equipment would be required, there was no mention of what the scope of testing should be. Also, no correspondence was found which indicted to what extent WPSC would conduct tests of TMI related equipment.

Kewaunee is in the process of developing a submittal to NRC to revise the TS that will address this event. The proposed revision to the TS will include containment penetration and isolation valve LCOs. With an approved LCO Kewaunee could continue to test the subject valves in accordance with the IST plan.

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In the event a TS amendment is not obtained to relax the requirements on the non-automatic containment isolation valves, revisions will be made to the valve testing program to test the valves during refueling outages when containment integrity is relaxed.

ADDITIONAL INFORMATION

The valves that are included in SP 55-167-4 are; SA-7003A&B, LOCA-2A&B, LOCA-3A&B, LOCA-100A&B, LOCA-10A&B and LOCA-201A&B. SA-7003B, LOCA-2B, LOCA-100B and LOCA-201B all receive automatic closure signals when their controls are selected to the control room.

SIMILAR EVENTS

None