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Exelon Nuclear

10 CFR 50.73

February 17, 2009
BW090019

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Unit 1
Facility Operating License No. NPF-72
NRC Docket No. STN 50-456

Subject: Licensee Event Report 2008-002-00 – Unit 1 Containment Isolation Valve 1PS229B De-energized Open Instead of Closed per Technical Specification 3.6.3

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system," paragraph (a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications (TS). On December 19, 2008, Braidwood Station determined that containment isolation valve 1PS229B was inoperable from December 17, 2008 until December 19, 2008, which is longer than allowed by TS 3.6.3 Condition A. 10 CFR 50.73(a) requires an LER to be submitted within 60 days following discovery of the event. Therefore, this report is being submitted by February 17, 2009.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. David Gullott, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,

Bryan Hanson
Site Vice President
Braidwood Station

Enclosure: LER 2008-002-00

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE
Unit 1 Containment Isolation Valve 1PS229B De-energized Open Instead of Closed per Technical Specification 3.6.3

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
12	17	2008	2008	- 002 -	00	02	17	2009	FACILITY NAME N/A	DOCKET NUMBER N/A

9. OPERATING MODE: 1

10. POWER LEVEL: 99.9

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
David Gullott, Regulatory Assurance Manager	(815) 417-2800

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)*	☒ NO		N/A	N/A	N/A

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

On December 17, 2008, while performing a pressure test on a portion of the primary sampling system, excessive leakage was identified on containment isolation valve 1PS228B. Technical Specification (TS) 3.6.3 Condition A was entered for 1PS228B, which required the penetration flowpath to be isolated within four hours by closing and de-activating at least one valve. At 13:48 hours, the redundant containment isolation valve, 1PS229B, was de-energized by fuse block removal, and TS 3.6.3 Condition A was considered to be met.

A subsequent review determined that 1PS228B was not inoperable, and this was verified on December 19, 2008, by performance of a local leak rate test on the affected containment penetration. Upon reenergization of 1PS229B to allow valve manipulation, the valve indicated Open. A review of 1PS229B identified the valve to be a fail as-is valve upon loss of power. Therefore, while the fuse block for 1PS229B was removed with the valve open, the valve could not close on a containment isolation signal, and was determined to be inoperable when the fuse block was removed. TS 3.6.3 Condition A applied to 1PS229B which required the valve be isolated within four hours. Valve 1PS229B was failed open for approximately 44 hours without being isolated.

The cause of this event was determined to be inadequate procedure guidance to ensure the component was placed in the proper position. The corrective action to prevent recurrence is to revise the operating procedure to add specific controls to prompt the user to identify the proper isolation valve, the failure mode of the valve if appropriate, and verifications that the actions taken properly isolated the penetration.

There were no actual safety consequences impacting plant or public safety as a result of this event. This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B).

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NARRATIVE

A. Plant Operating Conditions Before The Event:

Event Date: December 17, 2008 Event Time: 13:48

Unit: 1 MODE: 1 Reactor Power: 99.9 percent

Unit 1 Reactor Coolant System (RC) [AB]: Normal operating temperature and pressure

B. Description of Event:

There were no structures, systems or components inoperable at the beginning of the event that contributed to the severity of the event.

On December 17, 2008, Operations was performing a pressurization of a portion of the primary sampling system (PS) [KN] piping, as part of an American Society of Mechanical Engineers (ASME) surveillance. During the surveillance, excessive leakage was identified, and troubleshooting determined the leakage was due to leak-by of containment isolation valve 1PS228B. At 13:12 hours, Operations declared 1PS228B inoperable and entered Technical Specification (TS) 3.6.3, Containment Isolation Valves, Condition A. Condition A requires the penetration flowpath be isolated within four hours by closing and de-activating at least one valve. Operations determined that the redundant containment isolation valve, 1PS229B, would be closed and deactivated. At 13:48 hours, valve 1PS229B was de-energized by fuse block removal, and TS 3.6.3 Condition A was considered to be met.

During subsequent review, it was determined that the December 17, 2008 pressure test performed on the PS system piping had air flow directed toward containment and not away from containment. This is not the flow direction necessary to evaluate whether there is excessive leakage on the 1PS228B valve.

On December 19, 2008, a local leak rate test (LLRT) on the affected containment penetration was successfully performed. Based on the results of this LLRT, the determination was made that 1PS228B was never inoperable. At 09:30 hours, during performance of this LLRT, 1PS229B was reenergized to allow for 1PS229B manipulation. When the fuse block for 1PS229B was reinstalled, the valve indicated Open. A review of 1PS229B identified the valve to be a fail as-is valve upon loss of power. Therefore, while the fuse block for 1PS229B was removed to comply with TS 3.6.3 Condition A, with the valve open, the valve could not close on a containment isolation signal, and was determined to be inoperable with the fuse block removed.

On December 19, 2008, at 09:30 hours, 1PS229B was restored to operable status when the fuse block was reinstalled.

TS 3.6.3 Condition A applied to 1PS229B, which required the valve be isolated within four hours. Valve 1PS229B was failed open for approximately 44 hours without being isolated. Therefore, this event is reportable under 10 CFR 50.73(a)(2)(i)(B), any operation or condition which was prohibited by the Technical Specifications.

C. Cause of Event

Upon declaring 1PS228B inoperable, Operations determined that 1PS229B should be closed and deactivated to comply with TS 3.6.3 Condition A. The Operations supervisor identified the fuse block that needed to be removed to deactivate 1PS229B, and directed a nuclear station operator (NSO) to remove the fuse block. The NSO did not close 1PS229B prior to removing the fuse block and incorrectly believed the valve would fail to the closed position when the fuse block was removed.

NARRATIVE

All solenoid operated containment isolation valves at Braidwood Station fail to the closed position with the exception of two valves associated with each hydrogen monitor. Each hydrogen monitor has one containment isolation valve that fails open and one containment isolation valve that fails as-is. 1PS229B is a fail as-is valve.

The investigation of this event determined that the procedure used for entering and verifying the TS action statement requirements are met for inoperable containment isolation valves, is inadequate. The procedure documents the applicable TS action statement(s) entered, any loss of safety functions, affected support systems, and follow-up surveillances to ensure the TS action statement is met. In this event, the procedure documents that the 1PS229B is deactivated, but did not verify the final valve position. The procedure did not provide adequate guidance to ensure the components are placed in the proper position and subsequently verified in the position once the component is deactivated.

Therefore, the root cause of this event was determined to be inadequate procedure guidance to ensure the component was placed in the proper position and subsequently verified in the position once the component was deactivated to meet TS requirements.

D. Safety Consequences:

There were no safety consequences impacting the plant or public safety as a result of this event. During this event, isolation valve 1PS228B was closed while 1PS229B was deactivated in the open position. Based on the successful LLRT testing of 1PS228B, the 1PS228B valve was determined to be operable throughout the entire time the 1PS229B was open.

If a loss of coolant accident (LOCA) event occurred while the 1PS229B was deactivated open, the 1PS228B would have received a close signal for the valve and would have maintained containment integrity. Since 1PS228B is a fail open valve on a loss of power, the containment leakage is bounded by the Large Early Release Frequency (LERF) analysis for the unit, as described below.

The PS system is used to monitor containment hydrogen concentration during a beyond design basis event. The PS system takes a sample from inside of containment, flows through the hydrogen analyzer, and discharges back into containment. The sample piping is composed of one-half inch inside diameter stainless steel.

The plant specific probabilistic risk assessment screens all containment penetrations as being a non-significant source of leakage if the penetration is two inches in diameter or less. Assuming a complete loss of pressure boundary integrity simultaneously for all four affected penetrations per unit, would not result in a flow area equivalent to a two inch diameter penetration. Due to the size of the containment penetration, the resulting leakage during a LOCA event would not be sufficient to impact the LERF for the unit. The amount of leakage through the PS system piping is negligible compared to the TS leakage limit acceptance criteria for the containment. Therefore, the failure to isolate the penetration does not result in a significant risk increase.

This is not a safety system functional failure.

E. Corrective Actions:

The corrective action to prevent recurrence is to revise the operating procedure to add specific controls to prompt the user to identify the proper isolation valve, the failure mode of the valve, if appropriate, and verifications that the actions taken properly isolated the penetration.

Additional corrective actions include review of other procedures for single point vulnerabilities and revise those procedures as necessary.

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NARRATIVE

F. **Previous Occurrences:**

There have been no similar Licensee Event Report events at Braidwood Station in the last three years.

G. **Component Failure Data:**

Manufacturer	Nomenclature	Model	Mfg. Part Number
N/A	N/A	N/A	N/A