



Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
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Covert, MI 49043
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May 27, 2008

10 CFR 50.73(a)(2)(i)(B)
10 CFR 50.73(a)(2)(v)

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

Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

Licensee Event Report 08-002, Breaker Cubicle Switch Failure Results in High Pressure Safety Injection Pump Inoperability

Dear Sir or Madam:

Licensee Event Report (LER) 08-002 is enclosed. The LER describes a breaker cubicle switch failure resulting in high pressure safety injection pump, P-66A, inoperability. The occurrence is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the Technical Specifications, and 10 CFR 50.73(a)(2)(v) as a condition that could have prevented fulfillment of a safety function.

Summary of Commitments

This letter contains no new commitments and no revision to existing commitments.

A handwritten signature in black ink, appearing to read "C. Schwarz".

Christopher J. Schwarz
Site Vice President
Palisades Nuclear Plant

Enclosure

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ENCLOSURE 1

**LER 08-002, Breaker Cubicle Switch Failure Results in High Pressure Safety
Injection Pump Inoperability**

4 Pages Follow

1. FACILITY NAME PALISADES NUCLEAR PLANT	2. DOCKET NUMBER 05000255	3. PAGE 1 OF 4
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4. TITLE
Breaker Cubicle Switch Failure Results in High Pressure Safety Injection Pump Inoperability

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
03	26	2008	2008	002	00	05	27	2008	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER	
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(j)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

NAME Laurie A. Lahti	TELEPHONE NUMBER (Include Area Code) (269) 764-2788
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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
B	EB	33	A180	Y					

14. SUPPLEMENTAL REPORT EXPECTED YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On March 26, 2008, with the plant in Mode 1 at 100% power, during planned maintenance on high pressure safety injection (HPSI) pump P-66A, operators experienced difficulty in removing the P-66A 2400VAC breaker 152-207 from its cubicle. A mechanism-operated cell (MOC) switch operator (bayonet) located inside the breaker cubicle was found with two broken connections. The condition of the MOC switch bayonet would have prevented operating a contact that provides a permissive to open HPSI subcooling control valve CV-3071, thereby rendering P-66A inoperable. It was concluded that the MOC switch bayonet failed when breaker 152-207 operated on January 3, 2008. The MOC switch bayonet was replaced on March 26, 2008.

The cause was determined to be that the MOC switch bayonet design is marginal for the force applied by the stored energy vacuum breaker 152-207. The contributing cause is a failure to validate that the MOC switch used during manufacturer testing matched the switches installed at the plant.

The opposite train MOC switch bayonet was inspected and no damage was found. Subsequently the MOC switch bayonets for the safety bus switchgear were inspected. Replacement of the MOC switch bayonet and others of the same type in stored energy breaker cubicles is planned.

(9-2007)

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NARRATIVE**EVENT DESCRIPTION**

On March 26, 2008, with the plant in Mode 1 at 100% power, during planned maintenance on high pressure safety injection (HPSI) pump P-66A [P; BQ], operators experienced difficulty in removing the P-66A breaker 152-207 [52; EB] from its cubicle. A mechanism-operated cell (MOC) switch operator (bayonet) [33; EB] located inside the breaker cubicle, was found with two broken brazed or welded connections. The condition of the MOC switch bayonet would not have prevented proper operation of breaker 152-207. However, it would have prevented operating a contact that provided a permissive to open HPSI subcooling control valve CV-3071 [V; BQ] during a recirculation actuation signal (RAS). Opening CV-3071 on a RAS provides P-66A with adequate net positive suction head. Failure of the contact's ability to change states, which disabled automatic opening of CV-3071, rendered P-66A inoperable.

P-66A 2400VAC breaker 152-207 was operated on January 3, 2008, during performance of a Technical Specification (TS) surveillance procedure. P-66A was successfully started and stopped twice. It was concluded that during the last breaker open operation on January 3, 2008, the MOC switch bayonet failed. This rendered P-66A inoperable for approximately 83 days, from 1230 hours on January 3, 2008, to 2058 hours on March 26, 2008, when P-66A was returned to an operable condition following completion of maintenance.

TS Limiting Condition for Operation (LCO) 3.5.2 requires two emergency core cooling system (ECCS) trains to be operable. An inoperable P-66A results in one inoperable train of ECCS. It was not recognized that P-66A was inoperable until March 26, 2008. Therefore, the 72-hour completion time of TS 3.5.2 required action B.1 for restoring ECCS trains to operable status and the subsequent completion times for TS 3.5.2 required actions C.1 and C.2 were not met. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS.

During the period of time P-66A was inoperable, the opposite train HPSI pump P-66B was inoperable on four occasions for maintenance and testing, for a total of about five and a half hours. On these four occasions both trains of ECCS were inoperable. TS 3.5.2 required action D.1 requires immediate entry into LCO 3.0.3 when less than 100% of the required ECCS flow available. The completion time was not met on the four occasions that two ECCS trains were inoperable. This represents a condition prohibited by TS. This condition is also reportable in accordance with 10 CFR 50.73(a)(2)(v)(A), (B), and (D) as a condition that could have prevented fulfillment of a safety function. This condition represents a safety system function failure.

CAUSE OF THE EVENT

The MOC switch operator (bayonet) in the breaker 152-207 cubicle is original plant equipment

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NARRATIVE

supplied with the Allis Chalmers type "D" switchgear [SWGR]. The MOC switch is an auxiliary contact switch assembly mounted in the switchgear breaker cubicle. A fork shaped lever on the circuit breaker engages the MOC switch bayonet and rotates the switch when the breaker opens and closes. The same type of MOC switch is installed in all Palisades 2400VAC (busses 1C, 1D, and 1E) and 4160VAC (busses 1A, 1B, 1F, and 1G) Allis Chalmers switchgear, except one breaker cubicle that does not contain a MOC switch. 2400VAC busses 1C and 1D supply engineered safeguards loads. Prior to 2003, the majority of breakers in busses 1C and 1D were solenoid operated. Between 1999 and 2004, breakers in buses 1C and 1D were replaced with stored energy vacuum breakers. Breaker 152-207 was replaced in February 2004 with a stored energy vacuum breaker. The closing times for the solenoid operated breakers were four-to-five times longer than the newer stored energy vacuum breakers. The stored energy breakers impart higher forces onto the bayonet. The higher forces led to the failure. A possible cause or contributing cause may be a deficiency in the braze or weld connections that failed.

The present switchgear manufacturer, Siemens, indicated that the MOC switch bayonet was redesigned in the 1980s to strengthen the bayonet. Siemens conducted endurance tests when the vacuum breaker model was designed. The endurance tests were done with the stronger MOC switch bayonet and not with the MOC switch bayonet that is in use at Palisades. The Palisades staff was unaware of the 1980s design change for strengthening the bayonet, and it was not identified during the purchasing of the stored energy breakers. Therefore, this is a contributing cause for the failure.

CORRECTIVE ACTIONS

The failed MOC switch bayonet was replaced.

The extent of condition (EOC) was addressed by inspection of the opposite train breaker's MOC switch bayonet. No damage was found on the opposite train bayonet. The MOC switch bayonets for safety busses 1C and 1D were subsequently inspected. One other breaker, 152-206 for low pressure safety injection pump P-67A, was found with one switch bayonet having a similar braze or weld broken, however, the switch performed no safety function. The breaker remained functional.

Entergy Nuclear Operations, Inc. plans to install higher strength MOC switch bayonets in busses 1C and 1D breaker cubicles and in other stored energy breaker cubicles by June 2009.

Interim corrective action to address the EOC includes monitoring the same type of MOC switch bayonets until they are replaced. Visual inspections will be done following breaker operation for the 2400VAC and 4160VAC switchgear equipped with the faster operating stored energy breakers.

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SAFETY SIGNIFICANCE

This event is considered to be of very low safety significance. In this condition, the failure disabled automatic opening of HPSI subcooling control valve CV-3071 and rendered P-66A inoperable. While automatic opening was defeated, the ability to manually open the valve from the control room was not impacted and the valve was available to perform its intended function. Emergency Operating Procedure (EOP) Supplement 42, Pre and Post RAS [recirculation actuation signal] Actions, requires that P-66A be stopped if found operating with CV-3071 closed.

Subsequently, the EOP supplement allows manual starting of P-66A and manual alignment of CV-3071 if an additional HPSI pump is desired. Therefore, the condition did not result in the inability of P-66A to perform its required function.

The risk evaluation considered the periods when P-66B was inoperable while P-66A was in the discovered condition. The risk increase due to this combination is insignificant when compared to the risk increase due to the unavailability of P-66B alone.

PREVIOUS SIMILAR EVENTS

None.