



Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360

Kevin H. Bronson
Site Vice President

December 10, 2008

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

SUBJECT: Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
Docket No.: 50-293
License No.: DPR-35

Licensee Event Report 2008-004-00

LETTER NUMBER: 2.08.065

Dear Sir or Madam:

The enclosed Licensee Event Report (LER) 2008-004-00, "HPCI System Inoperable Due to Undervoltage Relay Failure in Valve Power Supply Circuit" is submitted in accordance with 10 CFR 50.73.

This letter contains no commitments.

Please do not hesitate to contact Mr. Joseph R. Lynch, (508) 830-8403, if there are any questions regarding this submittal.

Sincerely,

Kevin H. Bronson

FXM/dl
Enclosure

cc: Mr. James S. Kim, Project Manager
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Senior Resident Inspector
Pilgrim Nuclear Power Station

JE22
NER

LICENSEE EVENT REPORT (LER)

(See reverse for 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.

FACILITY NAME (1)

PILGRIM NUCLEAR POWER STATION

DOCKET NUMBER (2)

05000-293

PAGE (3)

1 of 4

TITLE (4)

High Pressure Coolant Injection System Inoperable Due to Undervoltage Relay Failure in Valve Power Supply Circuit

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	21	2008	2008	004	00	12	10	2008	N/A	05000	
									FACILITY NAME	DOCKET NUMBER	
									N/A	05000	
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)									
N		20.2201(b)		22.2203(a)(3)(i)		50.73(a)(2)(i)(C)		50.73(a)(2)(vii)			
POWER LEVEL (10)		22.2202(d)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(A)			
100		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(3)(1)(i)(A)		50.73(a)(2)(iii)		50.73(a)(2)(ix)(A)			
		20.2203(a)(2)(ii)		50.36(3)(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 Specify in Abstract below or in NRC Form 366A			
		20.2203(a)(2)(vi)		50.73(a)(2)(i)(B)		X 50.73(a)(2)(v)(D)					

LICENSEE CONTACT FOR THIS LER (12)**NAME**

Joseph Lynch – Licensing Manager

TELEPHONE NUMBER (Include Area Code)

508-830-8403

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
B	EI	27	C7770	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO
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EXPECTED SUBMISSION DATE(15)

MONTH DAY YEAR

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

On October 21, 2008, at 1944 hours, with the plant operating at 100% power, the Control Room received a Motor Control Center (MCC) D9 trouble alarm. Operators noted that the indicator light for the High Pressure Coolant Injection (HPCI) Injection Valve MO-2301-8 was extinguished. Investigation at the MCC revealed that the 125V DC valve control power circuit for the normally closed HPCI Injection Valve MO-2301-8 was deenergized due to failure of the undervoltage relay in the 250V DC power feed to the valve motor operator. HPCI was declared inoperable and applicable Technical Specification (TS) Limiting Conditions for Operation (LCO) were applied. The undervoltage relay was replaced, and HPCI was returned to operable standby status at 0404 hours on October 22, 2008.

The most probable root cause of the event was identified to be an isolated premature failure of the undervoltage relay due to a manufacturing defect.

Immediate corrective actions taken included the replacement of the undervoltage relay. Corrective actions planned include destructive failure analysis of the undervoltage relay; and engineering evaluation of installed DC powered motor operated valve undervoltage relays and associated preventative maintenance requirements.

The event posed no threat to public health and safety.

LICENSEE EVENT REPORT (LER)

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

BACKGROUND

The Pilgrim Station Core Standby Cooling Systems (CSCS) consist of the High Pressure Coolant Injection (HPCI) System, Automatic Depressurization System (ADS), Residual Heat Removal (RHR) System Low Pressure Injection (LPCI) mode, and Core Spray (CS) System. The HPCI System is designed to pump water into the reactor vessel for high pressure core cooling. Although not part of the CSCS, the Reactor Core Isolation Cooling (RCIC) System is also designed to pump water into the reactor vessel for high pressure core cooling, similar to the HPCI System.

The HPCI System injection piping includes two motor operated valves, MO-2301-8 and MO-2301-9, and a check valve, CK-2301-7. Valve MO-2301-8 is normally closed and is designed to automatically open on a system initiation signal. Motor Control Center (MCC) D9 provides 250V DC power to MO-2301-8. A separate 125V DC control power source is used in the valve's control power circuit. Valve position indication is also powered by the same 125V DC control power circuit.

For valve motor operator protection purposes, an undervoltage relay is installed in the 250V DC valve power feed circuit. If an undervoltage condition exists, the relay will deenergize and open contacts in the 125V DC valve control circuit to denenergize control power. Without valve control power, MO-2301-08 will not open or close in response to automatic initiation signals.

Technical Specification (TS) 3.5.C.1 specifies HPCI System operability when irradiated fuel is in the reactor vessel, reactor pressure is greater than 150 psig, and reactor coolant temperature is greater than 365° F. TS 3.5.C.2 specifies a 14-day Limiting Condition for Operation (LCO) from and after the date the system is made or found inoperable for any reason provided that during such 14 days all active components of the ADS, RCIC System, RHR System (LPCI mode), and Core Spray Systems are operable. TS 3.5.C.3 specifies a 24-hour timeframe for the initiation of an orderly shutdown (to a cold shutdown condition) if the requirements of TS 3.5.C cannot be met.

The CSCS and the RCIC Systems were operable prior to failure of HPCI Injection Valve MO-2301-8.

EVENT DESCRIPTION

On October 21, 2008, at 1944 hours, with the plant operating at 100% power and the mode switch in RUN, the Control Room received a Motor Control Center (MCC) D9 trouble alarm. Operators noted that the indicator light for the HPCI Injection Valve MO-2301-8 was extinguished. Investigation at the MCC revealed that the 125V DC valve control power circuit for the normally closed HPCI Injection Valve MO-2301-8 was deenergized due to failure of the undervoltage relay in the 250V DC power feed to the valve motor operator. HPCI was declared inoperable and applicable TS LCO requirements were applied. The undervoltage relay was replaced, and HPCI was returned to operable, standby status at 0404 hours on October 22, 2008.

The NRC was notified of the event at 2345 hours on October 21, 2008 via Event Report Number 44587.

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CAUSE

The most probable root cause (RC) of this event was identified to be an isolated premature failure of the Cutler Hammer Model Number BFD33T undervoltage relay due to a manufacturing defect.

CORRECTIVE ACTION

Corrective actions taken included replacement of the undervoltage relay.

Corrective action planned include the following:

- Undervoltage relay destructive failure analysis.
- Engineering evaluation of installed DC power motor operated valve undervoltage relays and associated preventative maintenance requirements.

These corrective actions are being tracked by the site Corrective Action Program (CAP).

SAFETY CONSEQUENCES

The condition posed no threat to public health and safety.

The event occurred during normal power operation while at 100% power with the mode switch in the RUN position. The reactor vessel pressure was approximately 1030 psig with reactor water temperature at saturation temperature for that pressure.

The Core Standby Cooling Systems (CSCS) consist of the HPCI System, Automatic Depressurization System (ADS), Core Spray System, and the Residual Heat Removal (RHR) System in the Low Pressure Core Coolant Injection (LPCI) mode. Although not part of the CSCS, the Reactor Core Isolation Cooling (RCIC) System is capable of providing water to the reactor vessel for high pressure core cooling, similar to the HPCI System.

The HPCI System provides high pressure makeup water to the reactor vessel after isolation of the vessel. The HPCI System was inoperable for approximately 8 hours and 30 minutes due to the loss of 125V DC control power to HPCI Injection Valve MO-2301-8. During this time frame the ADS, Core Spray, RHR, and RCIC Systems were operable and met the 14 day Technical Specification 3.5.C.2 limiting condition for operation requirements for operating the plant with an inoperable HPCI System. These systems provided capability to supply makeup water to the vessel and ensured adequate core cooling while the HPCI System was not operable. The HPCI System was restored to operable status, there was no long term safety significance associated with the event.

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REPORTABILITY

This report was submitted in accordance with 10 CFR 50.73(a)(2)(v)(D).

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of previously issued Pilgrim Station LERs. The review focused on LERs that involved a similar event where system function was lost due to loss of control power to motor operated valve control circuits. The review identified similar events where HPCI System valve function was lost: LER-2002-01- "High Pressure Injection System Inoperable due to Fuse Failure," LER-2004-02 – "High Pressure Injection System Fuse Failure While System Inoperable for Planned Maintenance and Testing," and LER 2005-01 – "HPCI System Inoperable Due to Fuse Failure in Motor Operated Valve Control Circuit." No LERs were located which involved loss of system function due to failure of the DC power undervoltage relays.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for Components and Systems referenced in this report are as follows:

COMPONENTS

CODES

Valve, Injection
Relay, Undervoltage

INV
27

SYSTEMS

High Pressure Coolant Injection (HPCI)
DC Power System – Class 1E

BJ
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