



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

Mike Bellamy
Site Vice President

September 4, 2002

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 2002-001-00

LETTER NUMBER: 2.02.078

Dear Sir or Madam:

The enclosed Licensee Event Report (LER) 2002-001-00, "High Pressure Coolant Injection System Inoperable due to Fuse Failure," is submitted in accordance with 10 CFR 50.73.

This letter contains no commitments.

Please do not hesitate to contact me if there are any questions regarding this report.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Bellamy".

Robert M. Bellamy

DWE/dd

Enclosure: LER 2002-001-00

cc: Mr. Hubert J. Miller
Regional Administrator, Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Senior NRC Resident Inspector

Mr. Douglas Starkey, Project Manager
Office of Nuclear Reactor Regulation
Mail Stop: 0-8B-1
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INPO Records

IE22

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 Fuse Failure

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
07	07	2002	2002	001	00	09	04	2002	N/A	05000
									N/A	05000

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)			
N	100	20 2201(b)	22 2203(a)(3)(i)	50 73(a)(2)(i)(C)	50.73(a)(2)(vii)
		22 2202(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(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 Bryan Ford – Licensing Manager	TELEPHONE NUMBER (Include Area Code) (508) 830-8403
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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
X	BJ	FU	B569	Y					

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

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

On July 7, 2002, the High Pressure Coolant Injection (HPCI) system was declared inoperable for 30 minutes.

The cause was a failed fuse that is part of the control power circuitry for the circuit breaker of a normally closed motor-operated valve in the HPCI system injection piping. Inspection of the failed fuse identified a separation that had occurred at an internal solder connection between the fuse end cap and the fusible link. The fusible link was intact. The fuse was replaced and the system was returned to operable status on July 7, 2002.

The event occurred at 100 percent reactor power with the reactor mode selector switch in the RUN position. The reactor vessel pressure was approximately 1035 psig with the water temperature at the saturation temperature for that pressure. This event posed no threat to public health and safety.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PILGRIM NUCLEAR POWER STATION	05000-293	2002	001	00	2 of 4

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

BACKGROUND

The High Pressure Coolant Injection (HPCI) system is part of the core standby cooling systems (CSCS) and is designed to pump water into the reactor vessel over a wide range of reactor vessel pressures. Technical Specification 3.5.C.1 specifies the HPCI system be operable when irradiated fuel is in the reactor vessel, reactor pressure is greater than 150 psig, and reactor coolant temperature is greater than 365° F.

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. The control circuit of the circuit breaker that powers the valve motor operator is powered by 125 vdc. Position indication for the valve is provided by indication lamps that are also powered by the same 125-vdc control power circuit. The control circuit is protected and powered by two 10-amp control fuses such that the circuit is de-energized by the electrical opening or removal of either fuse.

Just prior to the event, on July 7, 2002 at about 0015 hours, with the HPCI system in operable standby status, an on-shift control room licensed operator noticed the Green (closed) position indication lamp for valve MO-2301-8 was not illuminated as expected.

EVENT DESCRIPTION

On July 7, 2002 at 0015 hours, the HPCI system was declared inoperable because the normally closed HPCI system injection valve MO-2301-8 was inoperable. A 14-day limiting condition for operation (LCO) was entered in accordance with Technical specification 3.5.C.2 because the HPCI system was inoperable.

Initial utility licensed operator investigation found one of the two 10 amp 125-vdc control power fuses to be electrically open. The fuse in question was replaced and control power and position indication for valve MO-2301-8 was restored as a result of the fuse replacement. The HPCI system was returned to operable status by 0045 hours on July 7, 2002 and the LCO was terminated.

The NRC Operations Center was notified of the event in accordance with 10 CFR 50.72(b)(3)(v)(D) at 0450 hours on July 7, 2002.

The event occurred while at 100 percent reactor power with the reactor mode selector switch in the RUN position. The reactor vessel pressure was approximately 1035 psig with the reactor water temperature at the saturation temperature for the reactor pressure.

CAUSE

The cause was the failure of a 10-amp fuse in the 125-vdc control power circuit for valve MO-2301-8. The failed fuse was x-rayed and then disassembled for inspection. The inspection revealed a separation that had occurred at an internal solder connection. The separation was located between the fuse end cap and the fusible link tab. The fusible link was found intact. The inspection verified the separation was not due to an over current condition. Service operating life age related failure was considered as a possible factor but was eliminated based on documentation suggesting the fuse was installed in May 2001. Fuse clip looseness and oxidation were also considered as a possible contributing factor(s) but were eliminated because the fuse clip was not loose and there was no oxidation. The fuse was manufactured by Bussman Limitron, Class RK1, KWN-R010.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PILGRIM NUCLEAR POWER STATION	05000-293	2002	001	00	3 of 4

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

CORRECTIVE ACTION

The failed fuse was replaced.

Bussman Limitron, Class RK1, KWN-R-10 fuses are commonly used in 125 vdc control power circuitry (safety and non-safety related applications) at Pilgrim Station. Bussman was contacted regarding the failure and Bussman indicated this type of failure was an anomaly. To the best of the manufacturer's knowledge, there have been no other incidents of this type of fuse failure.

A search was conducted for similarity of events at Pilgrim Station caused by defective solder connections; none were found. In addition, a review was conducted of NRC Information Notices and communications from the nuclear steam system supplier, General Electric (SILs, RICSILs, SALs). The review identified no communications that included this type of defect.

SAFETY CONSEQUENCES

The event posed no threat to public health and safety.

The position indicating lamp for valve MO-2301-8 was discovered not illuminated as expected by the on-shift control room licensed operator at 0015 hours on July 7, 2002. The control room panels are walked-down during each shift turnover of the control room operators. The valve position indicating lamps on the control panels, including the position indicating lamps for valve MO-2301-8, are observed during the shift turnover walkdown by the on-shift licensed operator and are also observed periodically during each shift by the on-shift licensed operator. The position indicating lamps are also observable by other on-shift licensed operators in the control room including the Operations Shift Supervisor. During these activities, the position indicating lamp for valve MO-2301-8 was observed to be illuminated. Therefore, the fuse failure is assumed to have occurred at or near the time of discovery.

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. During the time period the HPCI system was inoperable, the ADS, RHR/LPCI mode, Core Spray, and RCIC systems were operable. In the unlikely event the RCIC system was to become inoperable while the HPCI system was inoperable and core cooling was necessary, an actuation (automatic or manual) of the ADS would function to reduce reactor vessel pressure for low pressure core cooling provided independently by the RHR (LPCI mode) and/or Core Spray system.

REPORTABILITY

This report was submitted in accordance with 10 CFR 50.73(a)(2)(v)(D) because the HPCI system was inoperable.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) issued since 1995. The review focused on LERs involving fuse failures. This review identified a somewhat similar event reported in LER 96-002-00, "Loss of Position Indication of Reactor Core Isolation Cooling Motor Operated Valve During Surveillance Test." The cause involved a loose control power fuse.

LICENSEE EVENT REPORT (LER)
 TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
PILGRIM NUCLEAR POWER STATION	05000-293	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 of 4
		2002	001	00	

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

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EII) CODES

The EII codes for this report are as follows:

COMPONENTS	CODES
Fuse	FU
Valve, Electrically Operated (MO-2301-8)	20
SYSTEMS	
High Pressure Coolant Injection (HPCI) system	BJ
DC Power system-Class 1E	EJ