Entergy

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

Kevin H. Bronson
Site Vice President

January 08, 2009

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 2008-005-00

LETTER NUMBER: 2.09.001

Dear Sir or Madam:

The enclosed Licensee Event Report (LER) 2008-005-00, "HPCI System Inoperable Due to Human Error" 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,

for Kevin H. Bronson

RMB/dl
Enclosure

cc: Mr. James S. Kim, Project Manager
Plant Licensing Branch I-1
Division of Operator Reactor Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
One White Flint North O-8C2
11555 Rockville Pike
Rockville, MD 20852

Mr. Samuel J. Collins
Regional Administrator, Region 1
U.S. Nuclear Regulator Commission
475 Allendale Road
King of Prussia, PA 19406

INPO Records
700 Galleria Parkway
Atlanta, GA 30399-5957

Senior Resident Inspector
Pilgrim Nuclear Power Station

IE22
NRR

NRC Form 366 U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

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4. TITLE
HPCI System Declared Inoperable During Surveillance Testing due to Human Error

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME N/A	DOCKET NUMBER 05000
11	20	2008	2008	005	00	01	08	2009	FACILITY NAME N/A	DOCKET NUMBER 05000

9. OPERATING MODE	N
10. POWER LEVEL	100

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

	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
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(B)	X	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)
Joseph Lynch – Licensing Manager	508-830-8403

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
	NO	COMPONENT	FAILURE						

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

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

On November 20, 2008, at 1657 hours, the High Pressure Coolant Injection (HPCI) System was declared inoperable with the plant at 100% power. No other plant equipment was out of service at the time. This action was taken because the HPCI System isolated on a Group IV signal when Instrumentation and Control (I&C) Technicians were performing a scheduled surveillance test of temperature switches in the HPCI steam leak detection circuitry. This isolation was not part of the planned evolution. HPCI was not operating at the time of the surveillance and all isolations went to completion. The Group IV isolation was reset and HPCI was placed in stand-by line up at 1805 hours on November 20, 2008.

The root cause of the event was identified to be less than adequate application of fundamental human performance tools on the part of an I&C Technician, specifically use of situational awareness relative to task analysis, job site review, questioning attitude, and stopping when unsure.

Immediate corrective actions taken included verifying that all temperature switches that were tested were left in the proper configuration. In addition, appropriate management attention was directed to the individual(s) involved including disciplinary action. Corrective actions planned include the revision of temperature switch procedures to include formality to the concurrent verification process.

The event posed no threat to public health and safety.

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NARRATIVE

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 to restore and maintain reactor water level with the reactor at pressure. The design function of HPCI is to deliver 4,250 GPM to the reactor over the range of reactor pressures from 150 to 1,000 psig, to ensure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break in the nuclear system and the resulting limited loss of coolant which does not result in rapid depressurization of the reactor vessel. The system can also be used for pressure control/cool down if the normal means of heat rejection (turbine bypass valves) become unavailable.

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 steam supply piping includes three motor operated valves, MO-2301-3, MO-2301-4, and MO-2301-5. Valve MO-2301-3 is normally closed and is designed to automatically open on a system initiation signal. The other two motor-operated valves MO-2301-4 and MO-2301-5 are part of the Primary Containment Isolation System (PCIS) and are normally open when reactor pressure is above the low-pressure isolation set point and are used to isolate the HPCI system from the vessel. These normally open valves maintain the HPCI piping at reactor temperature and pressure up to the turbine isolation valve MO-2301-3 to minimize thermal transients on system initiation. Both valves MO-2301-4 and MO-2301-5 will automatically close on receipt of a system isolation signal, or low reactor pressure. These two valves inadvertently closed during surveillance testing, the subject of this LER.

HPCI area high temperature instrumentation is provided to detect a break in the HPCI steam piping. Tripping of this instrumentation results in actuation and closing of HPCI isolation valves. Temperature is monitored at three (3) locations with four (4) temperature sensors at each location. Two (2) sensors at each location are powered by "A" direct current control bus and two (2) by "B" direct current control bus. Each pair of sensors, e.g., "A" or "B", at each location is physically separated and the tripping of either "A" or "B" bus sensors in series will close the HPCI isolation valves. Area high temperature trip settings, depending on sensor location, are such that core uncovery is prevented and fission product release is within limits.

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 inadvertent isolation of the HPCI system.

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NARRATIVE

EVENT DESCRIPTION

On November 20, 2008, at 1657 hours, the HPCI System was declared inoperable with the plant at 100% power. No other plant equipment was out of service at the time. This action was taken because the HPCI System isolated on a Group IV signal when I&C Technicians were performing a functional test of temperature switches in the HPCI steam leak detection circuitry. This isolation was not part of the planned evolution. All isolations went to completion. HPCI was not operating at the time of the surveillance. The Group IV isolation was reset and HPCI was placed in stand-by line up at 1805 hours on November 20, 2008.

The I&C technicians started the surveillance at the traversing in-core probe (TIP) room. There are four temperature switches that are tested at this location, two are located in junction box J605, and two are located in junction box J606.

J606 is located on duct work inside the TIP room west wall at elevation 31' approximately 18 inches above the floor. The terminal block does not have "Ponoma jacks" (specialty test connections) installed for easy accessibility and the technicians stated they had problems getting good contact on the terminals. (The terminal strip is a Weidmuller and the leads used were alligator clips.)

As the first temperature switch (TS-2371D) was heated-up, the technicians stated that it seemed to take a long time to get the actuation of the temperature switch; actuation of the switch is designated by a closure of contacts and verified by continuity across the terminal strips designated for this switch. They finally received the closure as shown by zero resistance on the meter. They removed heat from TS-2371D and verified no continuity across the switch, indicating the switch was open. At this point they reinstalled the temperature switch back into the duct work. The procedure calls for a second check that the temperature switch resets by verifying no voltage is present across the terminals of the next temperature switch to be tested. Heat is next applied to switch TS-2373D and verification of contact closure by observing continuity across the terminals. The technicians stated that the steps were performed in the proper order and signed off appropriately in the procedure.

The investigation has proved that the isolation happened during the heating of the temperature switch in junction box J606 by verifying a computer point that was actuated by the closure of both these switches.

NOTE: The configuration of these switches is electrically connected in series so that it takes the closure of two switches to initiate an isolation. If the first switch was not reset before heating up the second switch the isolation would occur.

The technicians exited the TIP room and proceeded to the next location of temperature switches. Operations personnel contacted the technicians at this point and informed them of the Group IV isolation.

A Technical Specification 3.5.C.2 limiting condition for operation was entered because the HPCI System was inoperable. The NRC Operations Center was notified of the event in accordance with 10 CFR 50.72 (b) (3) (v) (D) at 2121 hours on November 20, 2008 via Event Report Number 44672.

NARRATIVE

CAUSE

The root cause (RC) of this event was less then adequate application of fundamental human performance tools on the part of an I&C Technician, specifically use of situational awareness relative to task analysis, job site review, questioning attitude, and stopping when unsure (STAR technique).

Specifically, the I&C Technician proceeded to the job site with only alligator clips which is contrary to the standard job task of carrying two sets of probes (alligator and pin probes). The technician only carried alligator contacts based on his assumption that there would be installed Ponoma jacks available. Upon recognizing that no Ponoma jacks were installed, the technician continued with the task without questioning what could go wrong with only the alligator clips. Without the Pomona jacks, alligator clips are inappropriate for that work task/environment.

CORRECTIVE ACTION

The following corrective actions have been taken;

I&C Technicians verified that all temperature switches that were tested were left in the proper configuration. Additionally, the subject surveillance test was re-performed satisfactorily. Furthermore, appropriate management attention was directed to the individual(s) involved including disciplinary action.

The following corrective actions are planned;

Revision of temperature switch procedures to include concurrent verification enhancements.

These corrective actions are being tracked in the Corrective Action Program (CAP) under Condition Report CR-PNP-2008-3693.

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 67 minutes due to the inadvertent isolation during an I&C Surveillance test. 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 and there was no long term safety significance associated with the event.

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NARRATIVE

REPORTABILITY

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

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station LERs issued since 1998. The review focused on LERs that involved a similar event related to a procedural error or errors in the RCIC or HPCI Systems. The review found LER-2008-003-00 which was recently submitted due an inadvertent RCIC Group V isolation signal during the performance of an I&C surveillance. This event was due to a procedure error and not due to a human error.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

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

COMPONENTS	CODES
Valve, Isolation (MO-2301-4, MO-2301-5)	ISV
SYSTEMS	
High Pressure Coolant Injection (HPCI)	BJ
Containment Isolation Control System (PCIS)	JM