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J. E. Pollock
Site Vice President

NL-09-158

December 10, 2009

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555-0001

SUBJECT: Licensee Event Report # 2009-009-00, "Loss of Single Train Neutron Flux Detector N-38 Required for Plant Shutdown Remote From the Control Room Due to a Power Supply Failure"
Indian Point Unit No. 3
Docket No. 50-286
DPR-64

Dear Sir or Madam:

Pursuant to 10 CFR 50.73(a)(1), Entergy Nuclear Operations Inc. (ENO) hereby provides Licensee Event Report (LER) 2009-009-00. The attached LER identifies an event where the Technical Specification 3.3.4 Remote Shutdown safety function for neutron flux was inoperable due to a failed power supply for neutron source range detector N-38 thereby not available for remote shutdown from the control room, which is reportable as a safety system functional failure under 10 CFR 50.73(a)(2)(v). This condition was recorded in the Entergy Corrective Action Program as Condition Report CR-IP3-2009-04123.

There are no new commitments identified in this letter. Should you have any questions regarding this submittal, please contact Mr. Robert Walpole, Manager, Licensing at (914) 734-6710.

Sincerely,

Patrick W. Conway for J.E. Pollock
JEP/cbr

cc: Mr. Samuel J Collins, Regional Administrator, NRC Region I
NRC Resident Inspector's Office, Indian Point 3
Mr. Paul Eddy, New York State Public Service Commission
LEREvents@inpo.org

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NRK

LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 50 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.

1. FACILITY NAME: INDIAN POINT 3	2. DOCKET NUMBER 05000-286	3. PAGE 1 OF 4
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4. TITLE: Loss of Single Train Neutron Flux Detector N-38 Required for Plant Shutdown Remote From the Control Room Due to a Power Supply Failure

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
10	14	2009	2009-	009 -	00	12	10	2009	FACILITY NAME	DOCKET NUMBER
										05000
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: <i>(Check all that apply)</i>			
10. POWER LEVEL 100%	<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)
	<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 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 type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME Robin Daley, System Engineer	TELEPHONE NUMBER (Include Area Code) (914) 734-6817
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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
X	IG	JX	G077	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
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16. ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced type written lines)*

On October 14, 2009, the power supply for neutron flux detector N-38 was determined to be unable to provide reliable power to the detector. The detector was declared inoperable and Technical Specification (TS) 3.3.4 (Remote Shutdown) Condition A was entered. The neutron flux detector (source range) N-38 is a function specified in TS Basis Table 3.3.4-1 Function 1, Reactivity Control (and credited in Technical Requirements Manual (TRM) 3.3.D, Appendix R Alternate Safe Shutdown Monitoring). The inoperable N-38 failed to meet the specified safety function of TS 3.3.4. The apparent cause was a lack of a recurring preventive maintenance (PM) action to replace the power supplies because N-38 is not included in the Indian Point Energy Center (IPEC) Power Supply PM Program nor the IPEC Capacitor Replacement Program. Entergy procedure EN-DC-153, "Preventive Maintenance Component Classification," classified N-38 as a non-critical component. Corrective actions included replacement of the failed power supply with the operable power supply from redundant neutron flux detector N-39 which is not credited in TS 3.3.4. A new PM was initiated to periodically replace the power supplies of N-38 and N-39. A review will be performed of all non-critical components with power supplies to ensure the appropriate PMs are provided to replace or refurbish the equipment per EN-DC-153. The event had no effect on public health and safety.

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

Note: The Energy Industry Identification System Codes are identified within the brackets {}.

DESCRIPTION OF EVENT

On October 14, 2009, while at 100% steady state reactor power, at approximately 15:00 hours, the power supply {JX} for neutron flux detector {DET} (source range) N-38 {DET} was determined to be unable to provide reliable power to the detector. The detector was declared inoperable and Technical Specification (TS) 3.3.4 (Remote Shutdown) Condition A was entered. The neutron flux detector (source range) N-38 is a function specified in TS Basis Table 3.3.4-1 Function 1, Reactivity Control, TS 3.3.3 (Post Accident Monitoring Instrumentation), and credited in Technical Requirements Manual (TRM) 3.3.D, Appendix R Alternate Safe Shutdown Monitoring. The inoperable N-38 results in a failure to meet the specified safety function of TS 3.3.4 and meets the reporting criteria of 10CFR50.72(b)(3)(v) for a condition that could have prevented the fulfillment of a safety function needed to shut down the reactor and maintain it in a safe shutdown condition. At 17:09 hours, an 8-hour non-emergency notification was made to the NRC for a safety system functional failure (EN #45432). The condition was recorded in the Indian Point Energy Center (IPEC) Corrective Action Program (CAP) as CR-IP3-2009-04123.

On July 18, 2009, during performance of 3-PT-M100, operations reported that N-38 was reading 81% with an actual power at 100%, and therefore not reading within the test criteria of 10% of reactor power and required a full power alignment (calibration). The surveillance acceptance criteria was met at this time as both N-38 and N-39 read within one decade of reactor power. This condition was recorded in the CAP as CR-IP3-2009-03108. On September 24, 2009, during power range alignment of N-38, Instrumentation and Control (I&C) personnel determined the power range portion of N-38 was indicating off scale high. The data from the source and intermediate ranges were found satisfactory and met the requirements of TS 3.3.4 and TRO 3.3.D. This condition was recorded in the CAP as CR-IP3-2009-03904. On October 14, 2009, the signal from N-38 was below acceptable levels and N-38 was declared inoperable.

The Control Room (CR) {NA} is designed for an unlikely event that the CR becomes inaccessible and operators are required to establish control and shutdown the plant remote from the CR. The remote shutdown function provides designated equipment at appropriate locations outside the CR with the capability to promptly shut down and maintain the unit in a safe condition in Mode 3. The remote shutdown TS Limiting Condition for Operation (LCO) provides the operability requirements of the instrumentation and controls necessary to place and maintain the unit in Mode 3 from a location other than the CR. The instrumentation and controls are identified in TS Basis Table B 3.3.4-1 which includes the single train neutron flux detector (source range) N-38. Neutron flux detector (source range) N-38 has an indicator at panel K9T in the Primary Auxiliary Building (PAB) {NF} that provides the ability to verify neutron source range remote from the CR. Although the instrumentation and control was functioning, the function of Reactivity Control was considered inoperable as a result of an inoperable N-38 due to a degraded power supply.

Neutron flux detectors N-38 and N-39 are Gamma-Metrics {G077} Wide Range ex-core fission chamber type neutron flux detectors {IG}. The detectors are designed to monitor for possible power excursions. N-38 also provides local indication to satisfy Appendix R criteria and remote shutdown requirements of TS 3.3.4 (source range) in addition to indication in the CR.

An extent of condition review was performed and only N-39 applies. All other Nuclear Instrumentation System components are Westinghouse models and were verified to have replacement/refurbishment PM's in place.

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Cause of Event

The apparent cause was a lack of a recurring preventive maintenance (PM) action to replace the power supplies because N-38 is not included in the Indian Point Energy Center (IPEC) Power Supply PM Program nor the IPEC Capacitor Replacement Program. Entergy procedure EN-DC-153, "Preventive Maintenance Component Classification," classified N-38 as a non-critical component. Industry operating experience has indicated that power supplies which utilize capacitors and components prone to age-related degradation have life spans of approximately 15-20 years. A review of work orders did not identify any evidence that the low voltage power supplies have been replaced within this timeframe.

Corrective Actions

The following corrective actions have been or will be performed under Entergy's Corrective Action Program to address the cause and prevent recurrence:

- The N-38 power supply was replaced with the operable power supply from redundant neutron flux detector N-39 which is not credited in TS 3.3.4. A power supply for N-39 was purchased and installed on November 10, 2009.
- A new PM was initiated to periodically replace the power supplies of N-38 and N-39.
- A replacement power supply for N-38 was purchased and installation included in the work control process. Replacement of the power supply is scheduled for the spring of 2010.
- A review will be performed of all non-critical components with power supplies to ensure the appropriate PMs are provided to replace or refurbish the equipment per EN-DC-153. The review is scheduled to be completed by January 31, 2010.

Event Analysis

The event is reportable under 10CFR50.73(a)(2)(v), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) shut down the reactor and maintain it in a safe shutdown condition." On October 14, 2009, at approximately 15:00 hours, operations entered TS 3.3.4.A for an inoperable neutron flux detector (source range) N-38. The inoperability of N-38 (source range) was recognized as preventing the Technical Specification 3.3.4 (Remote Shutdown) function (TS Basis Table 3.3.4-1, Function 1.a, Source Range Neutron Flux for Reactivity Control). The inoperable single train N-38 resulted in a safety system functional failure. The operable power supply from redundant neutron flux detector N-39, which is not credited in TS 3.3.4 was used as a replacement to return N-38 to operable status. The detector was returned to service and the TS 3.3.4 action statement exited on October 15, 2009 at 14:00 hours. TS 3.3.3 Condition A was entered for neutron flux detector N-39 at 10:15 hours on October 15, 2009. The TS 3.3.3 entry was back dated to 18:00 hours on September 24, 2009 in accordance with the guidelines of TS 1.3 (Completion Times). After installing a new power supply for N-39 and calibrating it, TS 3.3.3 action statement was exited for N-39 on November 10, 2009, at 21:25 hours.

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

Past Similar Events

A review was performed of the past three years of Licensee Event Reports (LERs) for events that involved inoperable remote shutdown functions. LER-2008-002 reported on April 18, 2008, a safety system functional failure due to the loss of single train 31 pressurizer heater as a result of a failed power supply transformer. The 31 pressurizer heater was credited in TS 3.3.4 for plant shutdown remote from the CR. The unit 3 event was a different cause as that event was due to transformer insulation breakdown.

Safety Significance

This event had no effect on the health and safety of the public. There were no actual safety consequences for the event because there were no accidents or transients requiring shutdown outside the CR. Detector N-38 provides no actuation function only indication. Nuclear Instrumentation System (NIS) source range neutron flux detectors provide high flux level reactor trip and alarms signals to the reactor control and protection systems. The power range neutron flux low bounds uncontrolled control rod assembly withdrawal from subcritical. In addition, with the reactor in hot shutdown conditions, boration is not required immediately after shutdown. The core Xenon transient does not decay to equilibrium level until at least nine hours after shutdown and a further period would elapse before the reactivity margin provided by the full-length control rods had been canceled. This delay would provide time for implementing emergency measures.

In accordance with NUREG-0800, Section 7.4, shutdown remote from the CR is not an event analyzed in the USFAR for accident analysis (Chapter 14). Specific scenarios are not specified on which the adequacy of shutdown capability remote from the CR is evaluated. A recognized type of event that could force the evacuation of the CR and the need to shut down remote from the CR is smoke from a fire. Fire damage limits as they impact safe shutdown do not require consideration of an additional random single failure in the capability to safely shut down. Therefore, application of single failure to remote shutdown is applicable only to other events that could cause the CR to become uninhabitable. These events would not result in consequential damage or unavailability of systems required for safe shutdown.