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John A. Ventosa
Site Vice President

NL-12-058

May 9, 2012

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

SUBJECT: Licensee Event Report # 2012-003-00, "Technical Specification (TS)
Prohibited Condition Caused by Through Wall Defects in Reactor Coolant
Pressure Boundary Branch Lines"
Indian Point Unit No. 2
Docket No. 50-247
DPR-26

Dear Sir or Madam:

Pursuant to 10 CFR 50.73(a)(1), Entergy Nuclear Operations Inc. (ENO) hereby provides Licensee Event Report (LER) 2012-003-00. The attached LER identifies an event where there was a Technical Specification (TS) prohibited condition due to two through wall defects identified in Reactor Coolant Pressure Boundary branch lines which is not permitted by the TS, that is reportable under 10 CFR 50.73(a)(2)(i)(B). This condition was recorded in the Entergy Corrective Action Program as Condition Report CR-IP2-2012-01733.

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) 254-6710.

Sincerely,

JAV/cbr

cc: Mr. William Dean, Regional Administrator, NRC Region I
NRC Resident Inspector's Office, Indian Point 2
Mrs. Bridget Frymire, New York State Public Service Commission
LEREvents@inpo.org

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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 2	2. DOCKET NUMBER 05000-247	3. PAGE 1 OF 4
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4. TITLE: Technical Specification (TS) Prohibited Condition Caused by Through Wall Defects in Reactor Coolant Pressure Boundary Branch Lines

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	12	2012	2012-	003	- 00	05	09	2012	FACILITY NAME	DOCKET NUMBER
										05000
										05000

9. OPERATING MODE 6	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
10. POWER LEVEL 0%	<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 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 checked="" 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 Nelson Azevedo, Supervisor Code Programs	TELEPHONE NUMBER (Include Area Code) (914) 254- 6775
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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
B	AB	PSP	U080	Y	B	AB	TBG	V080	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 March 12, 2012, during a scheduled refueling outage (RO) boric acid program walk down inspection, two locations on Reactor Coolant System (RCS) pressure boundary (RCPB) branch piping had boron deposits that appeared not to be due to packing or mechanical joint leakage. The areas were cleaned and non-destructive surface examinations confirmed that the boric acid deposits were due to through wall defects. 1) Pressure Control Valve PCV-455A Spray Inlet Stop valve 4152 contained a defect on the top of the horizontal leak-off pipe in the base metal approximately one inch from where the pipe connects to the valve bonnet. 2) The socket weld of a 3/8 inch diameter tubing "tee" fitting down stream of valve 4138 contained a defect. Technical Specification 3.4.13 does not allow any RCPB leakage. The apparent cause of defect 1 (leak-off pipe) was stress corrosion cracking due to surface contamination. The apparent cause of defect 2 was poor quality weld due to insufficient weld reinforcement in part of the weld. Corrective actions included replacement of the bonnet of valve 4152 containing the leak-off pipe, and replacement of the socket welded "tee" with a Swagelok "tee" eliminating the two field welds that were lacking reinforcement. An engineering change (EC) and associated work orders (WO) will be prepared to eliminate the capped leak-off pipes on RCS valves at unit 2 and 3. A visual inspection on 10% (random sampling) of applicable field welds will be performed. The event had no significant effect on public health and safety.

LICENSEE EVENT REPORT (LER)

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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 March 12, 2012, during a scheduled refueling outage (RO) boric acid program walk down inspection, two locations on Reactor Coolant System (RCS) {AB} pressure boundary (RCPB) branch piping {PSP} had boron deposits that appeared not to be due to packing or mechanical joint leakage. The areas were cleaned and non-destructive surface examinations confirmed that the boric acid deposits were due to through wall defects. The two defects were (1) Pressure Control Valve PCV-455A Spray Inlet Stop valve 4152 contained a defect on the top of the 1/2 inch diameter horizontal leak-off pipe in the base metal approximately one inch from where the pipe connects to the valve bonnet, and (2) the socket weld of a 3/8 inch diameter tubing "tee" fitting {TBG} down stream of valve 4138 contained a defect. Valve 4138 is the isolation valve for RCS pressure transmitters PT-402 and PT-413. The condition was recorded in the Indian Point Energy Center (IPEC) Corrective Action Program (CAP) as Condition Report CR-IP2-2012-01733.

Inspections are performed during ROs on systems, components and piping inside containment that contain borated water and fall within the requirements of the Boric Acid Program. During the Unit 2 2012 spring RO, inspections identified locations where dry boron had accumulated. Each location was evaluated to determine if additional actions are required. As a result of these inspections two locations with boron deposits identified through wall defects in RCPB branch lines. The remaining locations with boron deposits were attributed to packing or mechanical joint leakage. Technical Specification (TS) 3.4.13 (RCS Operational Leakage) Limiting Condition of Operation (LCO) 3.4.13.a allows no RCPB leakage.

Defect #1 was a small through wall 1/8 inch indication on the top of the horizontal leak-off pipe for valve 4152 in the base metal approximately 1 inch from where the pipe connects to the valve bonnet. Valve 4152 is a manual 3 inch 1500 lb gate valve built in accordance with ASME Section III, Class 1. The leak-off pipe is a 1/2 inch schedule 80 pipe, material specification ASTM A312 Type 304 Stainless Steel (SS) with a socket welded cap. Design documentation shows that the leak-off pipe aligns with a lantern ring located between two sets of packing rings. The intent is that the lower set of packing provides the pressure boundary seal around the valve stem and any leakage past this packing would go through the lantern ring and out the leak-off pipe to a leak-off collection point. The upper packing set prevents leakage to the containment atmosphere. The current configuration has the lower set of packing replaced by a carbon spacer that performs no sealing function. Under the current installed packing arrangement and installed leak-off pipe cap, the leak-off pipe is pressurized to RCS pressure.

Defect #2 was a pin hole in the socket weld of a 3/8 inch diameter tubing "tee" fitting down stream of valve 4138. Valve 4138 is downstream of valve 954A located in the RCS sample line for hot leg loop 1. Valve 4138 is the isolation valve for pressure transmitters PT-402 and PT-413. The tubing tee was installed by a modification (MMC-77-2-02) in 1977 when PT-413, PT-433 and PT-443 were added to the system. The tubing is designed to class 2505 (Type 304 or 316 SS tubing, Type 316 SS Cajon Tee). The weld lacked sufficient reinforcement at the defect location.

An extent of condition review determined the following: For defect #1 there are additional valves at unit 2 (valves 535, 536, 4153, 4154, and 4155) and at unit 3 (valves 345, PCV-455a, RC-591, RC-593, RC-594, and RC-595) that have capped leak-off pipes with a similar arrangement as found on valve 4152.

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For defect #2 the installation of the 1977 modification (MMC-77-2-02) involved several hundred tubing welds of which approximately 83 were field welds. A random sampling of applicable welds will be visually inspected confirm weld quality.

In accordance with the Boric Acid Program, boric acid walkdowns during the refueling outage of all systems that contain borated water including the RCPB did not identify any other indications of through wall leaks. The walkdown performed during the last unit 3 refueling outage identified one through wall leak.

The Cause of Event

The apparent cause of defect #1 (leak-off pipe) was stress corrosion cracking due to surface contamination. Type 304 SS does not corrode when exposed to the RCS fluid. However, it is susceptible to stress corrosion cracking when its surface is contaminated with chlorides and/or fluorides. Chloride contamination can result from human handling during manufacturing and/or during installation. Valve insulation is another source of contamination due to leach out when the insulation gets wet from packing leaks. The apparent cause of defect #2 was poor quality weld due to insufficient weld reinforcement in part of the weld. The lack of weld reinforcement in part of the weld resulted in a slight local increase in the weld/tubing stress which when combined with any slight vibration over the operational period and thermal cycling caused a failure in the weld/tubing.

Corrective Actions

The following corrective actions have been or will be performed under the Corrective Action Program (CAP) to address the cause of this event.

- The bonnet of valve 4152 containing the leak-off pipe was replaced.
- The socket welded tubing "tee" down stream of valve 4138 was replaced with a Swagelok "tee" eliminating the two field welds that were lacking reinforcement.
- An engineering change (EC) and associated work orders (WO) will be prepared to eliminate the capped leak-off pipes on RCS valves at unit 2 and 3.
- A visual inspection on 10% (random sampling) of applicable field welds will be performed.

Event Analysis

The event is reportable under 10CFR50.73(a)(2)(i)(B). The licensee shall report any operation or condition which was prohibited by the plant's Technical Specification (TS). This event meets the reporting criteria because the Limiting Condition for Operation (LCO) for TS 3.4.13 allows no RCPB leakage and based on surface examinations and boron deposits, it was concluded the condition existed during past plant operation.

Past Similar Events

A review was performed of the past three years of Licensee Event Reports (LERs) for events reporting a TS violation due to a through wall defect in the RCPB. LER-2010-004 reported a leak in the RCPB on a 3/4 inch pipe (#76) upstream of check valve 256B on the 22 Reactor Coolant Pump seal bypass line. The leak was discovered during a RO inspection under the Boric Acid Program. The defect was a through wall indication as a result of a minor weld defect from the time of construction. This event is different as it was a result of missing weld due to poor workmanship. Inspections in 2010 did identify boron on this leak-off pipe but a surface exam at that time did not show any indication of a defect.

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

Safety Significance

This event had no significant effect on the health and safety of the public. There were no actual safety consequences for the event because there were no significant failures in the RCPB. Periodic inspections identify leaks when they are small so that repairs can be performed to prevent RCPB degradation. TS 3.4.13 has Surveillance Requirement 3.4.13.1 to verify RCS leakage is within limits by performance of RCS inventory balance every 72 hours. This surveillance ensures the integrity of the RCPB is maintained and provides a trend of leakage early before significant degradation. An early warning of RCPB leakage or unidentified leakage is provided by the systems that monitor containment atmosphere radioactivity and operation of the containment sump. Failure of a RCPB would be a Loss of Coolant Accident (LOCA). A LOCA is analyzed in UFSAR Section 14.3. A minor pipe break (small break) is defined as a rupture of the RCPB with a total cross-sectional area less than 1.0 square foot in which the normally operating charging system flow is not sufficient to sustain pressurizer level and pressure. The results of analysis in UFSAR Section 14.3.3.4 concluded the limiting break was a 3 inch cold leg break. The results of the analysis demonstrated that for a small break LOCA, the Emergency Core Cooling System will meet the acceptance criteria contained in 10CFR50.46. The LOCA analysis of Section 14.3 are bounding for the components reported in this LER.