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J. E. Pollock
Site Vice President

NL-10-035

April 30, 2010

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

SUBJECT: Licensee Event Report # 2010-002-00, "Technical Specification Prohibited Condition Caused by Two Main Steam Safety Valves Outside As-Found Lift Setpoint Test Acceptance Criteria"
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) 2010-002-00. The attached LER identifies an event where there was a Technical Specification prohibited condition for two inoperable Main Steam Safety Valves, which 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-IP2-2010-01181.

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,

A handwritten signature in black ink that reads "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

Handwritten initials "JEA2" and "NRC" in black ink.

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 Prohibited Condition Caused by Two Main Steam Safety Valves Outside As-Found Lift Setpoint Test Acceptance Criteria

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
3	09	2010	2010	002 - 00		04	30	2010	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 95%	<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 Steven Manzione, Component Engineering Supervisor	TELEPHONE NUMBER <i>(Include Area Code)</i> (914) 734-6772
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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	SB	V	C710	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES <i>(If yes, complete 15. EXPECTED SUBMISSION DATE)</i> <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On March 9, 2010, during surveillance testing, main steam safety valves (MSSV) MS-45C and MS-48C failed their As-Found lift set point test. Per the test, these valves must lift at +/- 3% of their required setting. Valve MS-45C lifted at 1108.6 psig, 12.6 psig outside its acceptance range of 1034 to 1096 psig. Valve MS-48C lifted at 1147.4 psig, 4.4 psig outside its acceptance range of 1077 to 1143 psig. All other MSSVs tested passed their test criteria and left within +/- 1% per test procedure. Technical Specification (TS) 3.7.1, "Main Steam Safety Valves," requires the MSSVs to be operable in accordance with TS Table 3.7.1-1 and Table 3.7.1-2. TS Surveillance Requirement (SR) 3.7.1.1 requires each MSSV be verified to lift per Table 3.7.1-2 in accordance with the In-service Testing Program. Operability of the MSSVs is defined as the ability to open within the set point tolerances. As these two valves were found outside their limit they were inoperable. The most likely cause of MS-45C outside its acceptance range was set point drift. The most likely cause of MS-48C outside its acceptance range was valve spring skew. The valves are subject to material property changes due to temperature, pressure and vibration which can affect set point accuracy and repeatability. Valve spring skew causes the spindle and internals to not remain perpendicular to the centerline of the valve producing frictional forces affecting the set point. Corrective actions included performing maintenance on both valves, adjusting as required, re-testing and left within the +/- 1% As-Left set point criteria. The MSSV maintenance procedure will be revised to provide more specific guidance on increasing valve guide bearing diameter. 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 March 9, 2010, during power coast down for a refueling outage, performance of surveillance procedure 2-PT-R006 (Main Steam Safety Valve Set point Determination) was initiated at approximately 9:38 hours. At 10:59 hours, main steam safety valve (MSSV) {SB} MS-48C {V} failed its As-Found lift set point test, and at 13:06, MS-45C failed its As-Found lift set point. In accordance with the test, these valves must lift at +/- 3% of their required setting. Valve MS-45C lifted at 1108.6 psig, which is 12.6 psig outside its acceptance range of 1034 to 1096 psig. Valve MS-48C lifted at 1147.4 psig, which is 4.4 psig outside its acceptance range of 1077 to 1143 psig. All other MS safety valves tested passed their As-Found test criteria and left within +/- 1% in accordance with the test procedure. Technical Specification (TS) 3.7.1, "Main Steam Safety Valves," requires the MSSVs to be operable in accordance with TS Table 3.7.1-1 and Table 3.7.1-2. TS Surveillance Requirement (SR) 3.7.1.1 requires each MSSV be verified to lift per Table 3.7.1-2 in accordance with the In-service Testing (IST) Program. The condition was recorded in the corrective action program (CAP) as condition report (CR) CR-IP2-2010-01181.

Operability of the MSSVs is determined by periodic surveillance testing in accordance with the IST program. As these two valves were found outside their lift limit they were inoperable. Valves MS-45C and MS-48C are associated with steam generator (SG)-23.

There are five code safety valves (MSSVs) and one power operated relief valve {RV} on each main steam (MS) line outside the Reactor Containment {NH} and upstream of the MS isolation valves {MSIVs}. The five code safety valves (MSSV) consist of four 6-inch by 10-inch and one 6-inch by 8-inch valve per SG on four MS lines. The valves are set to open at 1065, 1080, 1095, 1110, and 1120 psig. The operability of the MSSVs is defined as the ability to open within the set point tolerances, relieve SG overpressure, and reset when pressure has been reduced. The accident analysis requires five MSSVs per SG to provide overpressure protection for design basis transients occurring at 102% reactor thermal power. An MSSV is considered inoperable if it fails to open on demand. The MSSVs are high capacity nozzle type code safety valves manufactured by Crosby-Ashton Valve Company {C710}. Valve MS-45C is a 6-inch by 8-inch Crosby-Ashton Model HA-65W and valve 48C is a 6-inch by 10-inch Crosby-Ashton Model HA-65W.

An extent of condition (EOC) was performed that As-Found tested two additional valves in IST Group II for each failure (4 additional valves total). All 4 EOC valves were found satisfactory. All the IST Group II valves (MSSVs) have been tested within the last four years.

Cause of Event

The most likely cause of MS-45C outside its acceptance range was set point drift. The most likely cause of MS-48C outside its acceptance range was valve spring skew. The valves are subject to material property changes due to temperature, pressure and vibration which can affect set point accuracy and repeatability. In accordance with the valve manufacturer set point drift is found when a piece of equipment with moving parts remains in the same position for an extended period of time. The IST set point As-Left criteria (+/-1%) accounts for drift by being more restrictive than the As-found criteria (+/-3%).

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All springs for valves of the Crosby HA-65W design and guide bearing contact exhibit some spring skew which causes the spindle and internals to not remain perpendicular to the centerline of the valve. If the spring skew is too great, it will push moving internal parts off to one side and produce frictional forces that affect the set point. During the inspection of the valves the only findings were typical of normal wear. For valve MS-48C a mark was found on the spindle where it had been in contact with the guide bearing indicating spring skew.

Corrective Actions

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

- MS-45C was adjusted, re-tested and left within the +/- 1% As-Left set point criteria. No adjustments were required for MS-48C as subsequent lifts were lower than the original and fell within the +/-1% set point criteria.
- Preventive Maintenance (PM) was performed on MS-45c and MS-48C. MS-45C and MS-48C were disassembled and inspected. The inspection showed no abnormal conditions or broken parts. MS-48C had a mark on the spindle where it had been coming in contact with the guide bearing. The area of contact was polished out on the valve spindle.
- The inner diameter of both valves guide bearings were increased to reduce the potential for spring skew in accordance with work orders (WO) incorporating vendor guidelines.
- A review of the past history of MS-45C and MS-48C was performed and no past failures or similar circumstances were identified. A search for similar past events recorded in the IPEC CAP was performed and no instances were identified that MS-45C or MS-48C lifted above their acceptable set point.
- In accordance with the In-service Test (IST) program two additional valves in IST Group II were tested for each failure (4 additional valves). All four extent of condition (EOC) valves tested satisfactorily.
- The MSSV PM will be reviewed to determine if the frequency should be increased to mitigate future failures.
- The maintenance procedure for the MSSVs will be revised to provide more specific guidance for increasing the inside diameter (ID) of the guide bearings to reduce future contact.
- A review will be performed of past WOs to identify which MSSVs require their guide bearing diameter increased and WOs generated to perform the work.

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 TS. Technical Specification (TS) 3.7.1, "Main Steam Safety Valves," requires the MSSVs to be operable in accordance with TS Tables 3.7.1-1 and 3.7.1.-2. TS Surveillance Requirement (SR) 3.7.1.1 requires each MSSV be verified to lift per Table 3.7.1-2 in accordance with the In-service Testing Program. Operability of the MSSVs is defined as the ability to open within the set point tolerances. As valves MS-45C and MS-48C were found outside their +/- 3% required As-Found setting they were inoperable. In accordance with NUREG-1022, Section 3.2.2, reporting guidelines, the existence of similar discrepancies in multiple valves is an indication that the discrepancy arose over a period of time, therefore existed during plant operation and is reportable. MS-48C was retested satisfactorily at 11:13 hours, on March 9, 2010, and MS-45C was retested satisfactorily at 13:32 on March 9, 2010, and the TS 3.7.1 Limiting Condition for Operation (LCO) met.

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

This condition does not meet the reporting criteria of 10CFR50.73(a)(2)(v) (The licensee shall report any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: A) Shutdown the reactor and maintain it in a safe condition, B) remove residual heat, C) control the release of radioactive material, or D) Mitigate the consequences of an accident). An evaluation of the condition determined it would not have prevented accident mitigation capability and the MSSVs overpressure function would have been adequate.

Past Similar Events

A review was performed of Licensee Event Reports (LERs) for the past three years for any events reporting TS prohibited conditions due to multiple safety relief valve failures as a result of testing and none were identified for unit 2. Unit 3 had a similar occurrence on March 10, 2009, which was reported in LER-2009-002.

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 the MSSVs.

There was no significant potential safety impact of the condition under reasonable and credible alternate conditions. Had an accident or transient occurred during the condition of the two out of tolerance MSSVs, the condition would not have affected accident mitigation capability and the MSSVs overpressure function would have been adequate. Although the safety valves lifted at 1108.6 psig and 1147.4 psig which is above their accepted lift set point, the piping code per ANSI/ASME B31 for these pipes has a maximum design pressure of 1170.5 psig. The design basis of the MSSVs is to limit the secondary system pressure to less than or equal to 110% of design pressure when passing 100% of design steam flow. The combined MSSVs are sufficient to relieve approximately 108% of design steam flow. Each MS line has an atmospheric dump valve (ADV) capable of releasing steam to the atmosphere. The ADVs have the capability to relieve approximately 10% of total steam flow. The combined pressure relief capability of the MSSVs and ADVs is approximately 118% of rated steam flow. An Engineering evaluation concluded adequate pressure relief was available with 2 of the 20 MSSVs lifting at a higher pressure setpoint than specified.