



Indian Point Energy Center  
450 Broadway, GSB  
P.O. Box 249  
Buchanan, N.Y. 10511-0249  
Tel (914) 734-6700

J. E. Pollock  
Site Vice President

NL-09-154

December 2, 2009

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

SUBJECT: Licensee Event Report # 2009-008-00, "Technical Specification Prohibited Condition Due to Exceeding the Allowed Completion Time for an Inoperable Over Power Delta Temperature (OPDT) Bistable " 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) 2009-008-00. The attached LER identifies an event where there was a Technical Specification prohibited condition for an inoperable Over Power delta Temperature (OPDT) bistable during past operation, 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-IP3-2009-03817.

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,

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

JE22  
NRC

# 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

4. TITLE: Technical Specification Prohibited Condition Due to Exceeding the Allowed Completion Time for an Inoperable Over Power Delta Temperature (OPDT) Bistable

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	06	2009	2009	008	00	12	02	2009	FACILITY NAME	DOCKET NUMBER <b>05000</b>
									FACILITY NAME	DOCKET NUMBER <b>05000</b>

9. OPERATING MODE  1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)											
	<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)								
10. POWER LEVEL  100%	<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 Ovidio Ramirez, System Engineer Instrumentation & Controls	TELEPHONE NUMBER (Include Area Code) (914) 734-6818
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	JC	TS	N430	Y					

14. SUPPLEMENTAL REPORT EXPECTED

YES (If yes, complete 15. EXPECTED SUBMISSION DATE)  NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On September 17, 2009, during performance of surveillance 3-PT-Q87D (Channel Functional Test of Reactor Coolant Temperature Channel 441) bistable 3TC-441C/D As-Found test readings were identified as out of specification for the Over Power Delta Temperature (OPDT) reactor trip function. The bistable was adjusted in accordance with the procedure and all readings were left in specification. An assessment of the condition determined that bistable 3TC-441C/D had been found out of specification on the previous quarterly surveillance on June 26, 2009. Technical Specification 3.3.1 (Reactor Protection Instrumentation), Table 3.3.1-1, Function 6 has an Allowable Value per Note 2 of 1.8% of delta Temperature span, which for bistable TC-441C/D correlates to a 0.144 Volts DC (Vdc) deviation from the nominal value. The OPDT Trip test criteria is 6.60 (6.56 to 6.64) Vdc. The As-Found OPDT value was 6.86 Vdc which exceeded the TS allowed value. On October 6, 2009, engineering concluded the second failure can not be assumed to have occurred at the time of discovery and represented an inoperable condition during past operation. The apparent cause was a discrepancy between the maintenance and test equipment (M&TE) output and reference value seen by the bistable. The discrepancy can be attributed to a deficiency with the test points used to input the reference value. The failure mechanism was concluded to have been a faulty reference value that was sensed by the bistable. The OPDT bistable (3TC-441C/D) was replaced. Surveillance procedures 3-PT-Q87 A through D were revised to require recording voltages that are inputted into the instrument loop. Troubleshooting will be performed on the bistable circuit for possible test point deficiencies. The event had no effect on public health and safety.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point Unit 3	05000-286	2009	008	00	2 OF 4

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 September 17, 2009, while at 100% reactor steady state power, during performance of surveillance 3-PT-Q87D (Channel Functional Test of Reactor Coolant Temperature Channel 441) Instrumentation and Control (I&C) Technicians discovered bistable 3TC-441C/D {TS} As-Found test readings out of specification for the Over Power Delta Temperature (OPDT) reactor trip and OPDT Rod Stop function {JC}. The bistable was adjusted in accordance with the procedure and all readings were left in specification. Bistable TC-441C/D is the loop 4 OPDT trip and OPDT Rod Stop duplex alarm bistable. The bistable is a NUS {N430} Duplex Difference Alarm module, Model DAM 502-03.

An assessment of the condition determined that bistable 3TC-441C/D had been found out of specification on the previous quarterly surveillance on June 26, 2009. Technical Specification (TS) 3.3.1 (Reactor Protection Instrumentation), Table 3.3.1-1, Function 6 has an Allowable Value per Note 2 for OPDT Loop of 1.8% of delta Temperature span, which for bistable TC-441C/D correlates to a 0.144 Volts DC (Vdc) deviation from the nominal value, as long as no other components in the Loop show significant drift. The OPDT Trip test criteria is 6.60 (6.56 to 6.64) Vdc. The As-Found OPDT value was 6.86 Vdc which exceeded the TS allowed value. TS 3.3.1 requires the reactor protection system (RPS) {JC} instrumentation of each function in Table 3.3.1-1 to be operable. Condition A requires entry into Condition E immediately with one or more functions with one or more required channels or trains inoperable. Condition E.1 requires the inoperable channel to be placed in trip within 6 hours or be in Mode 3 in 12 hours. The event was recorded in the Indian Point Energy Center corrective action program (CAP) as CR-IP3-2009-03817.

The surveillance test allows for manipulation of the bistable dial settings if the As-Found settings are not within the desired tolerance. If the bistable dial settings are manipulated, it changes what the bistable uses as a basis for what the difference is between the reference value and its Delta T input value in order to trip. The performance of surveillance 3-PT-Q87D on June 26, 2009 found both the Rod Stop and Reactor Trip (RT) As-Found trip points out of specification low; as a result, an adjustment in the bistable dial settings for both functions was made. The change in the bistable dial settings allowed the As-Left trip points to be satisfactory (SAT) because by manipulating the dial settings, the reference value did not change, but the bistable was now sensing a larger difference between its reference and input Delta T. This increase on the bistable dial settings shifted up the trip points. The failure of the As-Found values during the June 26, 2009 surveillance can be attributed to a faulty reference input sensed by the bistable. The subsequent quarterly surveillance on September 17, 2009, found high As-Found trip points for both Rod Stop and Reactor Trips compared to the As-Left values from the June 26, 2009 surveillance. By having the nominal reference value at the bistable input, and the dial settings set up for the bistable to trip at a larger difference between inputs, the high As-Found trip points can be seen to have been accurate according to what the bistable dial settings were from the previous surveillance. A review was performed of the last six completed surveillances of 3-PT-Q87D. The review determined there has been no significant drift associated with bistable TC-441C/D.

The extent of condition review determined the condition may occur when testing Delta Temperature T(average) Loops I, II, III, and IV of the reactor protection system

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point Unit 3	05000-286	2009	008	00	3 OF 4

**CAUSE OF EVENT**

The apparent cause was the input reference value of bistable TC-441C/D was not in concurrence with the output value of M&TE during performance of surveillance 3-PT-Q87D because of a discrepancy between the M&TE output and the reference value seen by the bistable. The discrepancy can be attributed to a deficiency with the test points used to input the reference value. The failure mechanism was concluded to have been a faulty reference value that was sensed by the bistable on June 26, 2009. Research into the bistable's history determined there has been no significant previous drift.

A contributing cause was insufficient test data was recorded. Surveillance 3-PT-Q87D has steps in which specified voltages are set at test junctions. These voltages are inputted into the loop but are not required to be recorded. As a result, if any reference values are not the actual nominal value required, the trip points will move accordingly.

**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:

- OPDT bistable 3TC-441C/D was replaced on October 23, 2009.
- Surveillance procedures 3-PT-87A through D were revised to require recording voltage values inputted into the loop.
- Bench testing will be performed on the bistable that was removed and any anomalies documented. Bench testing is scheduled to be completed by March 18, 2010.
- Troubleshooting will be performed on the bistable circuit for possible test point deficiencies. Troubleshooting is scheduled to be completed by March 18, 2010.

**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 Specifications. On June 26, 2009, bistable TC-441C/D was found to have its OPDT Reactor Trip and OPDT Rod Stop trip points outside the TS limit in a conservative direction resulting in the trip function occurring earlier than required. The As-Found surveillance test readings on September 17, 2009, were identified as out of specification for the OPDT reactor trip and Rod Stop function in a non-conservative direction. The TS limit for OPDT was exceeded on both June 26 and September 17, 2009. The September 17, 2009 test failure was the second test failure of the TS value. In accordance with reporting guidelines of NUREG-1022, the discrepancy is assumed to occur at the time of discovery unless there is firm evidence based on review of relevant information such as equipment history and the cause of the failure, to indicate the discrepancy existed previously. Based on the magnitude of the As-Found failure, the second failure cannot be assumed to have occurred at the time of discovery. Using linear analysis and taking into account the magnitude of the failure, and the amount of time between functional tests (83 days), engineering determined it would have required approximately 41 days to exceed the TS limit. On October 23, 2009, bistable TC-441C/D was tested for As-Found readings with no drift found and replaced prior to 41 days. After evaluation of the condition, engineering concluded on October 6, 2009, that the second failure cannot be assumed to have occurred at the time of discovery and was an inoperable condition during past operation. The condition of inoperability exceeded the TS allowed completion time for the required actions.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Indian Point Unit 3	05000-286	2009	- 008	- 00	4 OF 4

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

There was no safety system functional failure reportable under 10CFR50.73(a)(2)(v) as the OPDT function has four channels arranged in a two out of four logic configuration where the trip of two channels results in a OPDT trip. Any of the remaining two operable channels would have generated the trip signal to satisfy the safety function. In accordance with reporting guidance in NUREG-1022, an additional random single failure need not be assumed in that system during the condition.

PAST SIMILAR EVENTS

A review was performed of the past three years of Licensee Event Reports (LERs) for events that involved a TS violation due to a safeguards actuation device degrading and exceeding its TS limit. LER-2009-005 reported a 480 volt bus undervoltage relay drifting and exceeding its TS value twice in addition to previous drifting outside its calibration limits. The test results for this event provided evidence that the relay drifted outside its calibration acceptance criteria and therefore was inoperable during past operation. The condition of inoperability exceeded the TS allowed completion time. The cause of the condition reported in LER-2009-005 was personnel error due to inadequate knowledge of the drift monitoring program and component drift performance. The CAs of the event reported in LER-2009-005 would not have prevented this event as the causes were different.

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 have been no conditions during past operation during the time the bistable exceed its TS limit requiring the actuation of OPDT or Rod Stop. During this time period the unit had two RTs: one RT on August 10, 2009, due to a turbine generator trip as a result of a lightning induced generator lockout relay trip, and one RT on August 27, 2009, due to a turbine autostop oil trip.

The RPS monitors parameters related to safe operation and trips the reactor to protect the reactor core against fuel rod cladding damage caused by departure from nucleate boiling (DNB) and to protect against reactor coolant system (RCS) damage caused by high system pressure. The RPS automatically trips the reactor under the following primary system conditions: 1) reactor power, as measured by neutron flux, reaches a pre-set limit, 2) temperature rise across the core, as determined from RCS loop differential temperature (DT), reaches a limit either from OPDT set point or an overtemperature DT (OTDT) setpoint, 3) pressurizer pressure reaches an established minimum limit, 4) loss of reactor coolant flow as sensed by low flow, loss of pump power or pump breaker opening, 5) pressurizer pressure or level trip the reactor to protect the primary coolant boundary when pressurizer pressure or level reaches an established maximum limit. The OPDT function is part of the RPS to initiate a RT. The RPS is designed on a channelized basis to achieve separation between redundant protection channels.

The OPDT trip prevents power density, anywhere in the core, from exceeding 118% of design power density and prevents fuel pellet melting. The OPDT function has four channels arranged in a two out of four logic configuration where the trip of two channels results in an OPDT trip. Any of the remaining two operable channels would have generated the trip signal to satisfy the safety function. The OPDT actuation logic is designed to withstand an input failure to the control system, which may require the protection function actuation, and a single failure in the remaining channels providing the protection function actuation.