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Exelon Nuclear

January 15, 2008

SVP-08-003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Unit 1
Renewed Facility Operating License No. DPR-29
NRC Docket No. 50-254

Subject: Licensee Event Report 254/07-002, "Safety Function Not Met Due to Out of Tolerance Turbine First Stage Pressure Switches

Enclosed is Licensee Event Report (LER) 254/07-002, "Safety Function Not Met Due to Out of Tolerance Turbine First Stage Pressure Switches," for Quad Cities Nuclear Power Station, Unit 1.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(v)(A), which requires the reporting of any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition, and Part 50.73(a)(2)(vii)(A), which requires the reporting of any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to shutdown the reactor and maintain it in a safe shutdown condition.

There are no regulatory commitments contained in this letter.

Should you have any questions concerning this report, please contact Mr. W. J. Beck at (309) 227-2800.

Respectfully,

Timothy J. Tulon
Site Vice President
Quad Cities Nuclear Power Station

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE
Safety Function Not Met Due to Out of Tolerance Turbine First Stage Pressure Switches

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
									N/A	N/A
11	16	07	2007	- 002 -	00	01	15	2008	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE
1

10. POWER LEVEL
97%

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

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ■ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ■ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Wally Beck – Regulatory Assurance Manager	(309) 227-2800

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	JD	PS	Ashcroft	Y					

14. SUPPLEMENTAL REPORT EXPECTED

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

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
N/A	N/A	N/A

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

On November 16, 2007, during 100% power operation of Unit 1, Instrument Maintenance Department surveillances determined that both Division I main turbine first stage low pressure scram enable switches were found out of tolerance high and therefore would have prevented fulfillment of a reactor scram safety function during power ascension between 38.5% Rated Thermal Power (RTP) and the as-found switch setpoint.

All four Unit 1 switches were replaced by a plant modification in May 2007 (refueling outage Q1R19). The original Barksdale model B1T-M12SS-TC switches were replaced with Ashcroft model B450SXCH-400PSI. The new switches were selected due to their improved deadband properties needed to resolve a relay chatter issue, and were procured under a commercial grade dedication process by an approved vendor.

The 1-0504A/B/C/D switches sense the main turbine first stage pressure, and are part of the Reactor Protection System (RPS) logic. The purpose for the switches is to provide an enable of the turbine stop valve closure RPS function and an enable of the turbine control valve fast closure (trip oil pressure-low) RPS function. Both functions are enabled to provide a reactor scram signal when reactor power is greater than or equal to 38.5% RTP.

Since both switches in Division I exceeded their allowed tolerances in the high direction, their trip enable function would have been unavailable if the unit was ascending in reactor power through the 38.5% RTP level. However, since power ascension was not in progress and the Unit was at full power (97%) during this event, Technical Specification requirements were not exceeded. There were no plant or public safety consequences as a result of this event.

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NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor, 2957 Megawatts Thermal Rated Core Power

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION

Safety function not met due to out of tolerance turbine first stage pressure switches due to setpoint drift.

A. CONDITION PRIOR TO EVENT

Unit: 1 Event Date: November 16, 2007 Event Time: 1230 hours
Reactor Mode: 1 Mode Name: Power Operation Power Level: 97%

B. DESCRIPTION OF EVENT

On November 16, 2007, during full power operation on Unit 1, Instrument Maintenance Department surveillances determined that both Division I main turbine [TA] first stage low pressure scram enable switches [PS] were found out of tolerance high and therefore would have prevented fulfillment of a reactor scram safety function during power ascension between 38.5% Rated Thermal Power (RTP) and the as-found switch setpoint. Technical Specifications 3.3.1.1, Reactor Protection System Instrumentation [JD], requires an enable of the turbine stop valve [ISV] closure scram function and an enable of the turbine control valve [FCV] fast closure (trip oil pressure-low) scram function at any reactor power greater than or equal to 38.5% RTP. Technical Specification Table 3.3.1.1-1 describes " >/= 38.5% RTP" as the "Applicable Modes or Other Specified Conditions," for when these two functions apply to plant operations.

All four Unit 1 switches were replaced by a plant modification in May 2007 (refueling outage Q1R19). The original Barksdale model B1T-M12SS-TC switches were replaced with Ashcroft model B450SXCH-400PSI. The new switches were selected due to their improved deadband properties needed to resolve a relay [94] chatter issue, and were procured under a commercial grade dedication process by an approved vendor (Trentec).

The 1-0504A/B/C/D switches sense the main turbine first stage pressure, and are part of the Reactor Protection System (RPS) logic. The purpose of the switches is to provide an enable of the turbine stop valve closure RPS function and as an enable of the turbine control valve fast closure (trip oil pressure-low) RPS function. Both functions are enabled to provide a reactor scram signal when reactor power is greater than or equal to 38.5% RTP.

The switches are normally on a required calibration frequency of once every three months. When both switches in Division I exceeded their required tolerances during the November 2007 calibration, the trip function enabled by the switches would have been unavailable if the unit was ascending in reactor power through the 38.5% RTP level. However, since power ascension was not in progress and the Unit was at full power (97%) during this event, Technical Specification requirements were not exceeded. There were no plant or public safety consequences as a result of this event.

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C. CAUSE OF EVENT

A root cause investigation (ongoing) has identified that the replacement Ashcroft pressure switches were overpressurized during the commercial grade dedication testing process by Trentec because the Ashcroft switch nameplate proof pressure was in error. The switches were tested to 2400 psig, which was provided as the switch nameplate proof pressure. The Instrumentation, Systems, and Automation Society (ISA) industry standard for nameplate proof pressure is a pressure that would not damage the switch. The testing performed at 2400 psig resulted in damage to the switches and led to a reduction in the repeatability of calibration to the required switch setpoint. Should the final results of the root cause investigation significantly impact the information of this LER, a Supplemental LER will be issued.

D. SAFETY ANALYSIS

The safety significance of this event was minimal. The unit was operating at full power at the time of the event with the switches enabled for the turbine stop valve closure scram function and enabled for the turbine control valve fast closure (trip oil pressure-low) scram function. Therefore, the turbine stop valve closure and turbine control valve fast closure signals would have properly caused a reactor scram if required. In addition, it was determined that the reset value of the switch (the point where the scram would be bypassed when the power level is being reduced) was well below the enable value due to the improved deadband properties. Unit 1 has no other applications in which this switch is used, and Unit 2 has no applications in which this switch is used. Consequently, plant impact of this condition with the plant operating was minimal.

E. CORRECTIVE ACTIONS

- The switches were recalibrated to within their required as-left setting tolerances on 11/16/07.
- A compensatory action identified in the Operability Determination required a temporary increase in the quarterly calibration frequency of the switches to a monthly frequency to reduce the likelihood of time related setpoint drift. The as-found values at the first recalibration of all four switches (on 12/07/07) and second recalibration (01/04/08) were satisfactory.
- The switches are anticipated to be replaced like for like, or with a suitable substitute by the end of February 2008, pending the outcome of the ongoing root cause investigation.
- The commercial parts dedicator (Trentec), has been contacted to ensure this issue is entered into their corrective action program.
- Station Procurement is revising procurement requirements for these pressure switches to ensure testing is performed to the required pressures.

F. PREVIOUS OCCURRENCES

One of two Division II switches was found to have exceeded its required tolerance during testing on 10/29/07. This is the only other event where an Ashcroft switch had exceeded the required tolerance that would have prevented fulfillment of a reactor scram safety function during power ascension between 38.5% RTP and the as-found switch setpoint.

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G. COMPONENT FAILURE DATA

The turbine first stage pressure switches are Ashcroft Model B450SXCH-400PSI. The switches are a commercial grade product supplied by Ashcroft and were dedicated for a Safety Related application by a qualified vendor (Trentec). An EPIX/NPRDS search identified no failure reports concerning this Ashcroft model switch, nor any failures of Ashcroft switches with similar model numbers.