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Exelon Nuclear

February 9, 2004
BW040014

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Braidwood Station, Unit 2
Facility Operating License No. NPF-77
NRC Docket No. STN 50-457

Subject: Submittal of Licensee Event Report Number 2003-005-00, "Unit 2 Setpoint Drift Causes Three of Three Pressurizer Safety Valve Lift Tests to Exceed Technical Specification Tolerance"

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system", paragraph (a)(2)(i)(b). 10 CFR 50.73(a) requires an LER to be submitted within 60 days after discovery of the event; therefore, this report is being submitted by February 9, 2004.

Should you have any questions concerning this submittal, please contact Ms. Kelly Root, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,

T. P. Joyce

Thomas P. Joyce
Site Vice President
Braidwood Station

Enclosure: LER Number 2003-005-00
cc: Regional Administrator - Region III
NRC Braidwood Senior Resident Inspector

IE22

NRC FORM 366 (7-2001)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004
LICENSEE EVENT REPORT (LER)		Estimated burden per response to comply with this information collection request: 50.0 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NOEB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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	2. DOCKET NUMBER	3. PAGE
Braidwood, Unit 2	STN 05000457	1 of 3

4. TITLE
Setpoint Drift Causes Three of Three Pressurizer Safety Valve Lift Tests to Exceed Technical Specification Tolerance

5. EVENT DATE MO	DAY	YEAR	6. LER NUMBER (YEAR - SEQUENTIAL NUMBER - REV NO)	7. REPORT DATE MONTH	DAY	YEAR	8. OTHER FACILITIES INVOLVED FACILITY NAME	DOCKET NUMBER
12	10	2003	2003-005-00				N/A	N/A
							N/A	N/A

9. OPERATING MODE	1
10. POWER LEVEL	100

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

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 73.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 73.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A
☐	☐	☐	

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Mike Smith, Plant Engineering Manager	(815) 417-2243

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	AB	SV	Crosby	No	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
Yes (If yes, complete EXPECTED SUBMISSION DATE).	✓	NO				

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

On December 10, 2003, Braidwood Station discovered that three of three pressurizer safety valves (PSVs) removed during the fall 2003 refueling outage and subsequently tested at an offsite facility, did not meet the Technical Specification (TS) acceptance criteria. TS 3.4.10, "Pressurizer Safety Valves," requires three PSVs to be operable with lift settings greater than or equal to 2460 psig and less than or equal to 2510 psig. The surveillance requirement requires each valve to be operable in accordance with the Inservice Testing (IST) Program and that following testing the lift setting shall be within +/- 1 percent of the TS setpoint. Two valves had lift setpoints that were low and one valve had a setpoint that was high.

There are no material condition issues with the PSVs that contributed to the test failures. The PSVs are performing within their design capabilities. The test failures are mainly due to the close tolerance required by the current plant safety analyses reflected in TS requirements and the inability of the valves to perform within that tolerance. The corrective action to revise the safety analyses to support a relaxation of the one percent TS requirement for the PSV lift setpoint tolerance is being pursued.

An evaluation on the effects of the PSVs lifting outside of the TS tolerance concluded that all acceptance criteria in the Updated Final Safety Analysis Report, Chapter 15, "Accident Analyses," were still met.

This event is being reported pursuant to 10CFR50.73(a)(2)(i)(B).

A. **Plant Operating Conditions Before The Event:**

Unit: 2 Event Date: 12/10/2003 Event Time: 08:00

MODE: 1 Reactor Power: 100

Reactor Coolant System (RCS)[AB] Temperature: 580 degrees F, Pressure: 2235 psig

B. **Description of Event:**

There were no systems or components inoperable that contributed to the severity of the condition reported.

As part of the fall 2003 refueling outage activities, the three PSVs (i.e., 2RY8010A, 2RY8010B and 2RY8010C) were removed in accordance with the IST program and replaced with three spare valves which had been previously verified to be within the TS required as-left tolerance of +/- 1 percent.

The three PSVs that were removed were sent to the NWS Technologies facility for as-found lift setpoint testing and refurbishment. On December 10, 2003, NWS provided the results of the testing to Braidwood Station. The PSVs acceptance criterion for the as-found lift setpoint is 2485 psig +/- 1 percent, as required by TS 3.4.10. Three of the three PSVs exceeded this criterion. One valve lifted at 2453 psig (i.e., 1.3 percent low), the second valve lifted at 2513 psig (i.e., 1.1 percent high) and the third valve lifted at 2427 psig (i.e., 2.3 percent low). Although outside of the TS required tolerance, the valve as-found lift setpoints were within the American Society of Mechanical Engineers, Section XI, "Rules For Inservice Inspection of Nuclear Power Plant Components," part OM-1 acceptance criteria of +/- 3 percent

Since all of the valves that failed the as-found lift setpoint testing had been replaced with operable valves during the fall 2003 refueling outage, no TS action applied at the time the valve test failures were discovered. However, the condition of multiple PSVs being outside of their required lift setting tolerance band is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications."

C. **Cause of Event**

The safety valves were inspected by the vendor and no material condition issues were found that may have contributed to the out of tolerance condition.

An Electric Power Research Institute (EPRI) evaluation concerning safety and relief valve testing indicates that the PSVs at Braidwood are performing within their design capabilities. The test failures are mainly due to the close tolerance required by the current plant safety analyses and reflected in TS requirements and the inability of the valves to perform within those tolerances.

The offsite test facility, NWS Technologies, indicated that based on industry experience, the PSVs performed as expected. The vendor stated that the number of valves exceeding the one percent tolerance band in the industry is significant. They also stated that most valves tested do not exceed two percent, and it is rare for valves to exceed three percent. Based on this information and a review of Braidwood Station's historical data, the Braidwood Station PSV test results are typical of those in the industry.

D. Safety Consequences:

The PSVs in conjunction with the Reactor Protection System, provide overpressure protection for the Reactor Coolant (RC)[AB] System. The safety valves are designed to prevent system pressure from exceeding the RC System safety limit of 2735 psig.

An evaluation on the effects of the PSVs lifting outside of the TS tolerance concluded that all acceptance criteria in the Updated Final Safety Analysis Report Chapter 15 analyses were still met.

The event did not result in a Safety System Functional Failure.

E. Corrective Actions:

Revision of the safety analyses to support relaxation of the TS lift tolerance for PSVs has been completed as the corrective action to prevent future PSV lift test failures.

A request for a license amendment to revise the PSVs lift setpoint was submitted to the NRC on June 27, 2003. The requested approval date of the license amendment is March 2004.

F. Previous Occurrences:

Test data from the last seven refueling outages at Braidwood Station show that out of 21 valves tested, 11 were found out of tolerance. Seven of those 11 were out of tolerance low, four were high. Only two of the valves exceeded two percent and none exceeded three percent.

Previously, when valve failures were determined to be outside of the TS limits, station management inappropriately interpreted the TS as being met if the as-found condition of the valve was within three percent, as required by the IST program, and the as-left setpoint was within one percent as required by the TS. Root cause analysis was performed and the corrective actions discussed in Section E above were developed and implemented.

G. Component Failure Data:

Manufacturer	Nomenclature	Model	Mfg. Part Number
Crosby	Pressurizer Safety Valve	HB-BP-86	N/A

NWS technologies

CR# 00189943

Need supervisor review

CEAR # 03-37

Customer Equipment Anomalies Report

Customer/Site: Exelon - Braidwood Station Customer P. O. 00066489

NWS Traveller #: 03-321, 03-322, 03-323

Part/Description: Crosby Pressurizer Safety Valve

Part Serial #: N56964-00-0071, N56964-00-0072, N56964-00-0073

NWS Originator: C. V. Sierra Date: 12/8/03

NWS Operations: T.P. Nederostek Date: 12/8/03

Description of Condition:

Braidwood as-found acceptance tolerance is +/- 1% of nameplate set-pressure 2485 psig.

Acceptance range is 2461 to 2509 psig.

Valve N56964-00-0071 as-found lift was 2453 psig, -1.3% of nameplate.

Valve N56964-00-0072 as-found lift was 2513 psig, +1.1% of nameplate.

Valve N56964-00-0073 as-found lift was 2427 psig, -2.3% of nameplate.

OM-1 Code acceptance tolerance is +/- 3%

Recommended Dispostion:

This CEAR is notification of the out-of-tolerance condition only. It requires a Braidwood representative to acknowledge this notification by signing below.

Customer Comments / Instructions:

Disposition: ☐ Accept As Is ☐ Repair ☐ Rework ☐ Scrap ☐ Replace ☒ Other

Customer Representative: Dan [signature] Date: 12-10-03

Approvals of Disposition

NWS Operations: Date:

NWS Quality Assurance: Date:

ANI Review & Acceptance Required: ☐ Yes ☒ No

Authorized Nuclear Inspector: Date:

This CEAR closed on:

NWS Quality Assurance: Date:

NWS 864-587-7001