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

Byron Station, Unit 2
Facility Operating License No. NPF-66
NRC Docket No. STN 50-455

Subject: Licensee Event Report 2010-001-00, "Reactor Protection and Auxiliary Feedwater Actuation Signals from Low Steam Generator Level Due to Inadequate Surveillance Testing"

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system," paragraph (a)(2)(iv), as a manual or automatic actuation of a safety system required to be reported. The LER involves the April 19, 2010, event involving the inadvertent generation of a Reactor Protection trip initiation and Auxiliary Feedwater initiation signal during shutdown surveillance testing.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. David Gudger, Regulatory Assurance Manager, at (815) 406-2800.

Respectfully,



Daniel J. Enright
Site Vice President
Byron Station

Enclosure: LER Number 455-2010-001-00

LICENSEE EVENT REPORT (LER)

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

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.

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4. TITLE
Reactor Protection and Auxiliary Feedwater System Actuation Signals from Low Steam Generator Level Due to Inadequate Surveillance Testing

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
4	19	2010	2010	001	00	06	18	2010	N/A	
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 4	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
10. POWER LEVEL 000	<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 checked="" 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 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

FACILITY NAME David Gudger, Regulatory Assurance Manager	TELEPHONE NUMBER (Include Area Code) (815) 406-2800
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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	MANU-FACTURER	REPORTABLE TO EPIX

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

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

On April 19, 2010, Byron Station Unit 2 was shutting down for a refuel outage and was in Mode 4. An outage activity during Mode 4 was to perform the Feedwater Isolation Valve (FWIV) surveillance procedure. At 0503, during the restoration section of the test procedure, a low level condition on the 2D Steam Generator (SG) inadvertently occurred which resulted in the generation of Reactor Protection trip initiation, Auxiliary Feedwater initiation, and SG Blowdown isolation signals. Due to shutdown conditions, the control rods were already fully inserted, the Reactor Trip breakers positioned open and the Auxiliary Feedwater pumps were removed from service.

The causes of the inadvertent actuation signals include Operations supervisory oversight of the FWIV testing activity was less than adequate, and the FWIV surveillance procedure was inadequate in that it did not provide for the specific recovery of SG level during the conduct of the procedure if levels were approaching the low actuation setpoint. Corrective actions include reinforcing the roles and responsibilities of key outage Operations positions, and revising the FWIV stroke procedure to incorporate steps that allow for SG level recovery strategies to manage system parameters to avoid challenges to actuation setpoints.

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NARRATIVE

A. Background

The Steam Generator (SG) [SB] low level Reactor Protection (RP) function and Auxiliary Feedwater (AF) [BA] Initiation function are required by Technical Specifications to be operable in Modes 1 and 2 and Modes 1 through 3, respectively. SG Blowdown (SD) [WI] isolation function from a SG low level is not a Technical Specification required function. In addition, the SD isolation function is not one of the required system actuations required to be reported in accordance with 10 CFR 50.73(a)(2)(iv).

B. Description of Event

Event Date / Time: April 19, 2010 / 0503

Unit 2 was in Mode 4- Hot Shutdown

Reactor Coolant (RC) [AB] System Temperature / Pressure: 250 F / 340 psig

On April 19 2010, at 0503, Unit 2 was in the process of cooling down for a refueling outage and was in Mode 4 – Hot Shutdown. As expected for this shutdown mode, control rods were fully inserted and reactor trip breakers opened, and the AF pumps removed from service. SD isolation valves were also open. No additional structures, systems, or components were inoperable at the start of this event that contributed to the event.

The Unit 2 outage schedule called for the performance of the Feedwater (FW) [SJ] Isolation Valve (FWIV) stroke surveillance procedure after Mode 4 entry and after at least one train of Residual Heat Removal (RH) [BP] System had been placed in shutdown cooling. This surveillance procedure temporarily isolates FW flow to the SGs which in turn causes a SG level decrease. Consequently, the procedure initially raises the SG level prior to commencing the valve strokes, but it does not contain steps to recover level lost during conduct of the testing. The procedure presumes testing would be completed before reaching the low setpoint.

The licensed operators and the test coordinator (i.e., a licensed senior reactor operator) assigned to perform this surveillance procedure received refresher training on the procedure prior to the start of the outage using the control room simulator. A pre-job brief was conducted for this training. This pre-job brief covered the precaution of not challenging the SG level high level and low level actuation setpoints but did not include any specific SG level control strategies to avoid challenging these setpoints.

On April 19, 2010, just prior to execution of the FWIV stroke procedure, one of the assigned operators to perform the procedure was reassigned to another outage activity. A second licensed operator, assigned to unit cooldown activities, was assigned an additional task to monitor SG levels during the FWIV testing. This second operator did not participate in the refresher training provided prior to the start of the outage in the simulator.

On April 19, 2010, at approximately 0308, Mode 4 was entered, and at 0407, the 2B RH train was placed in shutdown cooling. Subsequently, the FWIV stroke surveillance test commenced. The test coordinator determined that the pre-job briefing for the refresher training was sufficient and that no additional pre-job brief was necessary for the actual testing. The test coordinator then became focused on preparation for other testing activities, and the licensed Unit 2 Supervisor, though aware the FWIV testing was in progress, was focused on the continuing activities for the unit cooldown to Mode 5.

In prior Unit 2 outages, the FWIV procedure was typically executed after both RH trains were placed in shutdown cooling. This configuration in the past resulted in smaller SG level loss during the conduct of the procedure, and the procedure completion before approaching the low level setpoint.

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NARRATIVE

At 0503, during the restoration section of the FWIV stroke procedure, a low level actuation condition on the 2D SG inadvertently occurred, which resulted in the generation of a RP trip initiation, AF initiation, and SD isolation signals.

Though the actuation logic was satisfied and valid actuation signals generated, it did not result in the actuation of any plant components in the systems required to be reported in accordance with 10 CFR 50.73(a)(2)(iv). The Unit 2 reactor trip breakers were already open and both AF pumps were removed from service. The SD isolation occurred as expected.

SG levels were restored, initiation signals reset, and the cooldown to Mode 5 continued. This event is being reported to the NRC in accordance with 10 CFR 50.73(a)(2)(iv).

C. Cause of the Event

An investigation into this event identified the following causes:

The Operations supervisory oversight by the test coordinator and U2 Supervisor of the FWIV testing activity was less than adequate.

The FWIV surveillance procedure was inadequate in that it did not provide steps to mitigate a decreasing SG level such that the low level actuation setpoint would not be challenged.

The procedure was executed at a higher reactor coolant temperature than typical in previous outages. This allowed for a higher SG level reduction rate.

Not conducting an additional pre-job brief for the test when an operator was selected as part of the test team that did not receive the refresher training.

D. Safety Significance

There were no adverse safety consequences from this event. The RP and AF initiation protection functions from a low level SG are not required for this mode of operation. The control rods were already fully inserted, the reactor trip breakers open and the AF pumps were removed from service.

E. Corrective Actions

The roles and responsibilities of key outage operations positions will be reinforced with appropriate Operations personnel.

The FWIV stroke procedure will be revised to incorporate steps to allow for SG level recovery strategies before an actuation setpoint is reached.

A FWIV stroke procedure prerequisite will be revised to require both trains of RH to be placed in shutdown cooling.

The crediting of a pre-job brief for refresher training for an actual activity will be revisited.

F. Previous Occurrences

No previous events involving safety system actuation signals inadvertently generated due to similar causes were identified at Byron Station in the previous three years.