PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, NJ 08038-0236

PSEG
Nuclear LLC

March 21, 2016
LR-N16-0068

10 CFR 50.73

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

Salem Nuclear Generating Station Unit 2
Renewed Facility Operating License No. DPR-75
NRC Docket No. 50-311

SUBJECT: LER 311/2016-001
AFW Loop Response Time Exceeded Technical Specifications

Licensee Event Report, "AFW Loop Response Time Exceeded Technical Specifications" is being submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specification."

Should you have any questions or comments regarding the submittal, please contact Mr. Thomas Cachaza of Regulatory Affairs at 856-339-5038.

There are no regulatory commitments contained in this letter.

Sincerely,

Robert W Dodght for.

Eric Carr
Plant Manager
Salem Generating Station

pjd

Enclosure – LER 311/2016-001-00

cc Mr. D. Dorman, Administrator – Region 1, NRC
Mr. T. Wengert, Licensing Project Manager – Salem, NRC
Mr. P. Finney, USNRC Senior Resident Inspector, Salem (X24)
Mr. R. Braun, President and Chief Nuclear Officer – Nuclear
Mr. T. Cachaza, Salem Commitment Tracking Coordinator
Mr. L. Marabella, Corporate Commitment Tracking Coordinator

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@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 Page 2 for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Salem Generating Station – Unit 2	05000311	1 OF 4

4. TITLE AFW Loop Response Time Exceeded Technical Specifications

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 05000
04	20	2015	2016	001	000	03	21	2016	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 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)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
10. POWER LEVEL	☐ 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)
100%	☐ 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

LICENSEE CONTACT	TELEPHONE NUMER *(Include Area Code)*
Thomas J. Cachaza, Senior Regulatory Compliance Engineer	856 - 339 - 5038

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
A									

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

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

On January 19, 2016, while reviewing outage data, plant staff recognized that anomalous data collected in October 2015, for the 21 Auxiliary Feed Pump time response loop resulted in failure to meet a surveillance, rendering that channel of Auxiliary Feedwater automatic actuation inoperable. In November 2015, the isolation valve for the pressure override defeat pressure transmitter was found closed. The pressure transmitter provides an input into the 21 AFW Pump run-out protection circuit. With the isolation valve closed, it would take longer to sense pump discharge head and consequently the opening of the auxiliary feed pump flow control valves would be slower than normal. This condition resulted in 21 Auxiliary Feedwater Pump loop time response greater than Technical Specification (TS) acceptance criteria. The failed channel was not recognized and the TS action was not taken, resulting in a condition prohibited by TS. The investigation revealed that the condition most likely existed since April 20, 2015, when maintenance activities were performed on the auxiliary feedwater pump discharge pressure transmitter. The isolation valve was opened and the surveillance was performed satisfactorily.

This report is being made in accordance with 10CFR50.73 (a)(2)(i)(B), “Any operation or condition which was prohibited by the plant’s Technical Specifications.”

NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor {PWR/4}

Auxiliary Feedwater System/Pump Flow Control Valves {BA/FCV)

*Energy Industry Identification System (EIIS) codes and component function identifier codes appear as {SS/CCC}.

IDENTIFICATION OF OCCURRENCE

Event Date: 04/20/2015
Discovery Date: 01/19/2016

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 2 was in Mode 1 at 100 percent rated thermal power (RTP).

DESCRIPTION OF OCCURRRENCE

On January 19, 2016, while reviewing outage data, plant staff recognized that anomalous data collected in October 2015, for the 21 Auxiliary Feed Pump time response loop resulted in failure to meet a surveillance, rendering that channel of Auxiliary Feedwater automatic actuation inoperable. In November 2015, the isolation valve for the pressure override defeat pressure transmitter was found closed. The pressure transmitter provides an input into the 21 AFW Pump run-out protection circuit. With the isolation valve closed, it would take longer to sense pump discharge head and consequently the opening of the auxiliary feed pump flow control valves {BA/FCV} would be slower than normal. The AFW flow control valves will not open until adequate pump discharge head is sensed by the pressure transmitter. This condition resulted in 21 Auxiliary Feedwater Pump loop time response greater than Technical Specification (TS) acceptance criteria. The failed channel was not recognized and the TS action was not taken, resulting in a condition prohibited by TS. The investigation revealed that the condition most likely existed since April 20, 2015, when maintenance activities were performed on the auxiliary feedwater pump discharge pressure transmitter. This condition resulted in 21 Auxiliary Feedwater Pump loop time response greater than the acceptance criteria required by surveillance 4.3.2.1.3. The isolation valve was opened and the surveillance was performed satisfactorily.

Timeline

04/20/15	2PA3450, 21 Auxiliary Feed Pump Discharge Pressure Transmitter, calibration done
10/18/15	Operations performed time response testing on 21 Auxiliary Feedwater (AFW) loop
11/18/15	I&C technicians documented unsatisfactory time response for 21 AFW loop
11/20/15	Instrument isolation valve for 2PA3450 found closed
01/19/16	Plant staff review of outage data identified failed surveillance and need to review condition for reportability

Operations began time response testing in advance of the scheduled refueling outage while still in MODE 1. When 21 AFW loop was tested, the long response time of the flow control valves for the two loops associated with the pump were noticed, but not documented or investigated for impact on operability.

When I&C began to collate time response data from the outage testing, they recognized the failure to meet the acceptance criteria for 21 AFW loop time response. The isolation valve for the discharge pressure transmitter was found closed. The isolation valve was opened, and the loop response time testing was completed with satisfactory results.

The investigation for the mispositioned pressure transmitter isolation valve did not definitively conclude that the maintenance activities of April 20, 2015, created the condition, but no other procedures operate the isolation valve. All other AFW surveillances were completed satisfactorily during the period from April through October. The dynamic system response and the pressure override function are only tested by the time response surveillance ; the other AFW surveillances would not reveal the mispositioned pressure transmitter isolation valve.

The impact of the mispositioned valve was not recognized until a review of outage data was performed on January 19, 2016.

This event is being recorded in accordance with 10CFR50.73 (a)(2)(i)(B), “Any operation or condition which was prohibited by the plant’s Technical Specifications.”

CAUSE OF EVENT

The most likely cause of this event was the failure to return the auxiliary feedwater pump discharge pressure transmitter instrument isolation valve to the open position following transmitter calibration.

SAFETY CONSEQUENCES AND IMPLICATIONS

The Auxiliary Feedwater (AFW) System serves as a backup system for supplying feedwater to the secondary side of the steam generators at times when the Main Feedwater System is not available. The AFW System is relied upon to prevent core damage and system overpressurization.

An engineering review concluded that while the AFW loop response time test results did not meet the procedural acceptance criteria, the accident analysis assumptions remained valid. The ATWS (Anticipated Transient Without Scram) was determined to be the limiting accident, and the loop response times were still bounded by the existing analyses. There were no safety consequences as a result of this event.

SAFETY SYSTEM FUNCTIONAL FAILURE

This condition did not result a safety system functional failure as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines.

PREVIOUS EVENTS

A review of previous events for the past three years identified no similar events.

CORRECTIVE ACTIONS

The pressure transmitter isolation valve was re-opened and the time response surveillance for 21 Auxiliary Pump flow control was performed with satisfactory results.

COMMITMENTS

There are no regulatory commitments contained in this LER.