PSEG Nuclear LLC
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PSEG Nuclear LLC

July 6, 2020
LR-N20-0044

10 CFR 50.73

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

Salem Nuclear Generating Station Unit 1
Renewed Facility Operating License No. DPR-70
NRC Docket No. 50-272

SUBJECT: LER 272/2020-002-00
Salem Unit 1 and Unit 2 RHR availability for Emergency Core Cooling in Mode 4

This Licensee Event Report, "Salem Unit 1 and Unit 2 RHR availability for Emergency Core Cooling in Mode 4," is submitted pursuant to 10 CFR 50.73(a)(2)(v)(D), 10 CFR 50.73(a)(2)(i)(B), and 10 CFR 50.73(a)(2)(vii).

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,

David Sharbaugh
Salem Plant Manager

Enclosure – LER 272/2020-002-00

cc: USNRC Regional Administrator – Region 1
USNRC NRR Project Manager – Salem
USNRC Senior Resident Inspector – Salem
NJ Department of Environmental Protection, Bureau of Nuclear Engineering
Commitment Coordinator, Salem Generating Station
Corporate Commitment Coordinator, PSEG Nuclear, LLC

NRC FORM 366 (04-2020) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 04/30/2020

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)
(See NUREG-1022, R.3 for instruction and guidance for completing this form
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Salem Generating Station – Unit 1	05000272	1 OF 2

4. TITLE
Salem Unit 1 and Unit 2 RHR availability for Emergency Core Cooling in Mode 4

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
									Salem Generating Station – Unit 2	05000311
05	05	2020	2020	- 002	- 00	07	06	2020	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)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
100	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☑ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☑ 50.73(a)(2)(i)(B)	☑ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(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	MANUFACTURER	REPORTABLE TO ICES	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO ICES

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 5/5/2020, an evaluation determined that in MODE 4, the temperature of the fluid in the residual heat removal (RHR) pump suction header exceeded the temperature which, under postulated shutdown loss of coolant accident (LOCA) conditions, could have resulted in cavitation of the RHR system. The condition is postulated to occur during both the injection phase, when suction is aligned to the refueling water storage tank (RWST) as well as the recirculation phase when suction is aligned to the Emergency Core Cooling (ECCS) sump. This postulated condition results in the inoperability of the RHR system while in MODE 4.

Corrective actions to revise the affected procedures have been created. Interim corrective actions are in place until procedure revisions are completed.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(D), 10 CFR 50.73(a)(2)(i)(B), and 10 CFR 50.73(a)(2)(vii).

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1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
Salem Generating Station — Unit 1	05000272	2020	- 002	- 00

NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

Westinghouse-Pressurized Water Reactor (PWR/4)
Residual Heat Removal (RHR) — Low Pressure Safety Injection System {BP}

IDENTIFICATION OF OCCURRENCE

Event Date: May 5, 2020

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in MODE 1, operating at 100 percent power. Salem Unit 2 was in MODE 5 restoring from a refueling outage.

DESCRIPTION OF OCCURRRENCE

On 5/5/2020, an evaluation determined that in MODE 4, the temperature of the fluid in the residual heat removal (RHR) pump suction header exceeded the temperature which, under postulated shutdown loss of coolant accident (LOCA) conditions, could have resulted in cavitation of the RHR system. The condition is postulated to occur during both the injection phase, when suction is aligned to the refueling water storage tank (RWST) as well as the recirculation phase when suction is aligned to the Emergency Core Cooling (ECCS) sump. This postulated condition results in the inoperability of the RHR system while in MODE 4.

CAUSE OF THE EVENT

Westinghouse NSAL 09-08 was evaluated during recent procedure upgrades and the adequacy of the procedure temperature limitations was evaluated by engineering. The engineering evaluations determined that in MODE 4, the temperature of the fluid in the residual heat removal (RHR) pump suction header exceeded the temperature which, under which a postulated shutdown loss of coolant accident (LOCA) conditions, could have resulted in cavitation of the RHR system for both injection phase and recirculation .

SAFETY CONSEQUENCE AND IMPLICATIONS

The potential exists for cavitation of the RHR suction header if the RHR system is actuated for ECCS following RHR operation in shutdown cooling at coolant temperatures that are within technical specification allowances. The RHR suction header for each train is cross-connected to share a common flow path from the RCS or RWST. Therefore, this could affect both RHR trains and is considered a safety system functional failure. Both Salem units have operated in this condition for short time periods.

When in MODE 4, technical specifications require one operable ECCS that includes a train of RHR. Review of plant operating history found brief instances in which RHR was operated in shutdown cooling at elevated coolant temperatures where cavitation is expected if RHR pressure is reduced when actuated for ECCS operation. Therefore, this is considered operation in a condition prohibited by technical specifications and common cause inoperability of independent trains. No component failures contributed to this event.

CORRECTIVE ACTIONS

Corrective actions to revise the affected procedures have been created. Interim corrective actions are in place until procedure revisions are completed.

PREVIOUS EVENTS

There were no similar events in the past three years.

COMMITMENTS

There are no regulatory commitments contained in this LER.