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

PSEG Nuclear LLC

DEC 2 7 2005
LR-N05-0578

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

LER 272/05-004-00
SALEM - UNIT 1
FACILITY OPERATING LICENSE NO. DPR-70
DOCKET NO. 50-272

This Licensee Event Report, "Containment Sump – As Found Condition Not in Accordance With Design Documents," is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(v)(B) and 10CFR50.73(a)(2)(v)(D).

The attached LER contains no commitments.

Sincerely,

Carl Fricker
Plant Manager
Salem Generating Station

Attachment

/EHV

C Distribution
LER File 3.7

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 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

Containment Sump As-found Condition not in Accordance With Design Documents

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
10	25	2005	2005	004	00	12	27	2005	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

5

10. POWER LEVEL

0

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)
E. H. Villar, Senior Licensing Engineer	856-339-5456

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
D			-	No					

14. SUPPLEMENTAL REPORT EXPECTED

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

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

During the seventeenth Salem Unit 1 refueling outage (1R17), PSEG (licensed and non-licensed personnel) performed an inspection of the Salem Unit 1 containment sump. The inspection revealed gaps of approximately 0.75 inches between the top of the containment sump cage mesh and the removable sump cover, and at the top of the containment sump steal plate where pipe and conduits penetrate into the containment sump. Gaps internal to the sump were also noted in the containment sump upper screen mesh that provides clearance for the vortex plate support rods.

The apparent cause for the gaps noted in the sump upper screen mesh that provides clearance for the vortex plate support rods has been attributed to poor implementation and maintenance practice during the installation of vortex breakers within the sump and original sump construction. The deficiencies that could have allowed debris to enter the containment sump were corrected during the seventeenth refueling outage.

This condition is reportable per 10CFR50.73(a)(2)(v) as condition that could have prevented the fulfillment of a safety function of structures or system designed to remove heat or mitigate the consequences of an accident.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

Charging/Safety Injection (SI) System {CB} *
Residual Heat Removal (RHR) System {BP} *

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

IDENTIFICATION OF OCCURRENCE

Event Date: October 26, 2005

Discovery Date: October 26, 2005

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in its seventeenth refueling outage (1R17). No structures, systems or components were inoperable at the time of the discovery that contributed to the event.

DESCRIPTION OF OCCURRENCE

The design of the containment sump, located on elevation 78' consists of two compartments: the containment sump and the Emergency Core Cooling System (ECCS) sump. The two Residual Heat Removal (RHR) {BP} pumps take suction from the ECCS sump at the 70' elevation. A sump curb, at elevation 78' 9", prevents floor debris a direct access to the sump. A basket type strainer with 0.125-inch mesh size protects the intrusion of debris into the ECCS portion of the sump. A trash rack surrounds the screened basket to prevent large debris.

During the seventeenth Salem Unit 1 refueling outage (1R17), PSEG (licensed and non-licensed personnel) performed an inspection of the Salem Unit 1 containment sump. The inspection revealed gaps of approximately 0.75 inches between the top of the containment sump cage mesh and the removable sump cover, and at the top of the containment sump steal plate where pipes and conduits penetrate into the containment sump. Gaps internal to the sump were also noted in the containment sump upper screen mesh that provides clearance for the vortex plate support rods.

These gaps could allow low density debris and debris that is neutrally buoyant in water to pass through these gaps during the recirculation phase of a Loss of Coolant Accident (LOCA), when sump operation is required. Debris having a density higher than water would sink to the bottom and remain on the bottom.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

DESCRIPTION OF OCCURRENCE (cont'd)

Although, the configuration and location of the gaps would have made it difficult to transport material through these gaps, about three feet above floor level; it is difficult to definitively establish that downstream throttle valves or line orifices would not have been blocked. Therefore, without a positive determination that components would not have been blocked, this event is being reported per the requirements of 10CFR50.73(a)(2)(v) as a condition that could have prevented the fulfillment of a safety function of structures or system designed to remove heat or mitigate the consequences of an accident.

PREVIOUS OCCURRENCES

A review of reportable events for Salem Generating Station in the last two years did not identify any prior similar occurrences relative to the containment sump.

CAUSE OF OCCURRENCE

The apparent cause for the gaps noted in the sump upper screen mesh that provides clearance for the vortex plate support rods has been attributed to poor implementation and maintenance practice during the installation of vortex breakers within the sump and original sump construction.

There are two significant factors that contributed to the failure to identify this condition earlier. First, the location of the openings was on the top screen below the top solid plate. This space, approximately 1.5 feet between the screen and the floor inside the sump, is a high contamination area and crawling or sliding between the screen and the floor is very difficult due to its physical size, and constitutes a personnel contamination hazard. Poor lighting conditions inside the sump made it difficult to find these openings. Secondly, the sump inspection procedure was too general and did not provide specific inspection guidance or acceptance criteria for all aspects of the containment sump strainer.

Currently, an ongoing containment sump design review per Generic Letter 2004-02 is in progress. The new sump design is expected to be significantly different than the current design. Therefore, the current environmental conditions and inspection procedure deficiencies will be eliminated with the new strainer design. Installation of the strainers is currently scheduled for the next refueling outages for Salem 2 and Salem 1 respectively.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

SAFETY CONSEQUENCES AND IMPLICATIONS

There was no actual safety consequences associated with this event.

The safety implications are minimal due to the configuration and location of the openings. The configuration and location of the openings would have made it difficult to transport material through the gaps. Because the gaps were located approximately three feet above floor level, it would not have been possible that heavy metallic objects (e.g., those that might have been dislodged as a result of impingement forces during a LOCA), to have been transported to the sump. Any heavier material would have settled on the containment floor or stopped at lower strainer locations. Material that is neutrally buoyant or less dense than water could have been transported through the gaps. Neutrally buoyant material is generally not considered a threat to the mechanical operability of the pumps, but could potentially present a clogging hazard for downstream orifices, nozzles or valves. However, this neutrally buoyant material is generally light, non-rigid, mostly fibrous material, and would have been more likely to pass through the system due to the differential pressure across the valve, orifice or nozzle. The surface area of the sump screen is large when compared to the surface area of the identified gaps, making it highly probable that any neutrally buoyant material would have been stopped from entering the sump by the screen mesh rather than passing through the gap location.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines, occurred.

CORRECTIVE ACTIONS

1. The deficiencies that could have allowed debris to enter the containment sump were corrected during the seventeenth refueling outage.

2. The Salem Unit 2 sump was examined for similar conditions; the Salem Unit 2 sump does not have a similar condition.

COMMITMENTS

This LER contains no commitments.