



FEB 10 2009

10 CFR 50.54(f)

LR N09-0028

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
Rockville, MD 20852

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

Subject: **Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01 Unit 1 response, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

- References:
1. NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated January 11, 2008
  2. PSEG LR-N08-0074, "Three-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated April 10, 2008
  3. NRC letter from R. Ennis to W. Levis, "Hope Creek Generating Station and Salem Nuclear Generating Station, Unit Nos. 1 and 2 - Re: Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, And Containment Spray Systems, Proposed Alternative Course Of Action", dated September 8, 2008
  4. PSEG LR N08-0234, Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems", dated October 13, 2008

The Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2008-01 (Reference 1) to request that each licensee evaluate the licensing basis, design, testing, and Corrective Action Programs (CAP) for the Emergency Core Cooling

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FEB 10 2009

Systems (ECCS), Decay Heat Removal (DHR) system, and Containment Spray system, to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate action is taken when conditions adverse to quality are identified.

PSEG Nuclear has submitted the initial nine-month response (Reference 4). As committed in Reference 2, and approved by the NRC in Reference 3, Salem Nuclear Generating Station (SNGS) Unit 1 completed its confirmatory assessments of those inaccessible portions of these systems/functions during the past refueling outage 1R19 and is providing a supplement to the nine-month response in the enclosure. **(CM-U1-2008-31 and CM-U1-2008-32)**

All evaluations pertaining to Unit 1 entered into the CAP as described in the enclosure of Reference 4 have been completed and a supplemental response is provided in the enclosure. **(CM-U1-2008-98)**

In summary, with the completion of the 1R19 outage walkdowns, PSEG Nuclear confirms that the subject systems/functions at the SNGS Unit 1 are operable and are currently in compliance with Appendix B to 10 CFR 50, Criterion III, V, XI, XVI and XVII, with respect to the concerns outlined in GL 2008-01 regarding gas accumulation in these systems/functions.

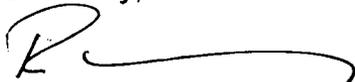
The enclosure to this letter contains the SNGS Unit 1 nine-month supplemental (Post-Outage) response to NRC GL 2008-01.

This letter contains no new NRC commitments.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 2/10/09

Sincerely,



Robert C. Braun  
Site Vice President – Salem

Enclosure: Salem Nuclear Generating Station, Unit 1 - Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems".

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**Salem Nuclear Generating Station, Unit 1 Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

This enclosure contains the Salem Nuclear Generating Station (SNGS) Unit 1 nine-month supplemental (Post-Outage) response to NRC Generic Letter (GL) 2008-01 for actions that were deferred until the next refueling outage as allowed by the NRC in Reference 3.

PSEG Nuclear has submitted the initial nine-month response in Reference 4.

The following information is provided in this enclosure:

- (a) A description of the results of evaluations that were performed pursuant to the requested actions GL 2008-01 on the previously incomplete activities, such as system piping walkdowns, at SNGS Unit 1 (See Section A of this enclosure)
- (b) A description of any additional corrective actions determined necessary to assure system operability and compliance with the quality assurance criteria in Sections III, V, XI, XVI, and XVII of Appendix B to 10 CFR Part 50 and the licensing basis and operating license with respect to the subject systems, including a schedule and a basis for that schedule (See Section B.1 of this Attachment)
- (c) A summary of any changes or updates to previous corrective actions, including any schedule change and the basis for the change (See Section B.2 of this enclosure), and
- (d) A summary of completed corrective actions (See Section B.3 of this enclosure)

The following systems were previously determined to be in the scope of GL 2008-01 for SNGS Unit 1:

- Residual Heat Removal (RHR) System - Low Head Safety Injection (LHSI) portion
- Chemical Volume Control (CVC) System - High Head Safety Injection (HHSI) portion
- Safety Injection (SJ) System - Intermediate Head Safety Injection (IHSI)
- RHR System - Shutdown Cooling (SDC) Hot Leg Suction portion
- Containment Spray (CS) System

**Salem Nuclear Generating Station, Unit 1 Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

**A. EVALUATION RESULTS**

Design Evaluation

As committed in Reference 2, and approved by the NRC in Reference 3, SNGS Unit 1 completed its assessments of those inaccessible portions of these systems/functions during the past refueling outage 1R19 and is providing a supplement to the nine-month response (Reference 4) in this enclosure.

1R19 Confirmatory Walkdowns

PSEG Nuclear has completed its assessments of those inaccessible portions (inside the bioshield wall) of the CVC, RHR, and SJ systems during the past refueling outage, 1R19.

Piping slopes were calculated by taking relative piping elevation measurements over each continuous horizontal segment of piping using an industry recognized elevation-measuring device known as a ZipLevel®. All segments sloped in an improper direction of one degree or greater that were identified prior to SNGS Unit 1 outage 1R19 have been entered into the Corrective Action Program (CAP) and have had ultrasonic testing (UT) performed at the high points of the segment and verified to be water solid.

Below are the results of the Unit 1 outage (1R19) confirmatory walkdowns:

No segments were identified to be sloped in an improper direction of one degree or greater.

All piping was either measured level (sloped below one-half a degree) or sloped in the proper direction (e.g., towards a system vent connection) except those segments sloped in an improper direction of one-half degree to one degree slope as noted below:

- One segment of the CVC System was found to be sloped in the improper direction
- Five segments of the RHR System were found to be sloped in the improper direction

**Salem Nuclear Generating Station, Unit 1 Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

- Five segments of the SJ System were found to be sloped in the improper direction

It is noted that the walkdowns for the CS System were completed prior to the 1R19 outage and results were submitted in Reference 4.

Void size analysis was performed using the arch area of the void, segmenting the pipe into five sections with a correlating void area and summing the five sections to establish the total void approximation. In this evaluation, no potential void areas were found to exceed 0.5 cubic feet with the majority not exceeding 0.05 cubic feet.

Inspection of SNGS Unit 1 ECCS pipe slopes performed during 1R19 confirmed there were no field conditions that would create a potential unvented high point that would impair the operation of any ECCS system. No emergent issues were identified concerning vent installations to maintain plant operability.

During the ECCS system walkdowns, it was confirmed that vent valves were installed in the design locations as shown on plant drawings. No modifications to existing vent valves or additional utilization of existing vent valves were identified as necessary for operability as a result of the walkdowns.

**B. DESCRIPTION OF NECESSARY CORRECTIVE ACTIONS**

**1. Additional Corrective Actions**

No additional corrective actions were identified as a result of the SNGS Unit 1 outage 1R19 walkdowns and subsequent evaluations performed.

**2. Corrective Actions Updates**

The cross-connect section of piping of the RHR system between the RH19 valves was identified as not fully ventable (see Reference 4). The design change to install a vent location in this section of piping is scheduled for completion by the end of SNGS Unit 1 outage 1R20.

SNGS Unit 1 evaluated implementation of the PWROG program methodologies and is establishing the applicable limits for gas accumulation in piping of the ECCS systems: CVC System - HHSI

**Salem Nuclear Generating Station, Unit 1 Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

System; RHR - LHSI System and SDC Hot Leg; and SJ - IHSI System. A five percent gas void criterion has been procedurally implemented for the CVC System and has been entered into the CAP to be implemented for the RHR System and the SJ System procedures.

**3. Completed Corrective Actions**

As committed in Reference 2, and approved by the NRC in Reference 3, SNGS Unit 1 completed its confirmatory assessments of those inaccessible portions of these systems/functions during the 1R19 refueling outage.

All CVC - HHSI System piping (suction and discharge piping) from the Refueling Water Storage Tank (RWST) to the injection point which is required to be water-filled to perform its design basis function has been completely walked down.

All RHR - LHSI System piping (suction and discharge piping) from the RWST to the injection point and RHR – SDC Hot Leg Suction piping which is required to be water-filled to perform its design basis function has been completely walked down.

All SJ - IHSI System piping (suction and discharge piping) from the RWST to the injection point which is required to be water-filled to perform its design basis function has been completely walked down.

All CS System piping (suction and discharge piping) from the RWST to the discharge isolation valve which is required to be water-filled to perform its design basis function was completely walked down prior to 1R19.

One potential vent location (one on Unit 1 CVC – HHSI discharge piping) was identified from prior walkdown activities (Reference 4) as having over one degree slope. UT was performed and the specified piping segment was found water solid. Therefore, this item is not an operability concern. HHSI water hammer is not probable as the section of pipe in question is normally pressurized to near RCS pressure to collapse any possible void. During an injection, the void, if present, would be pressurized to RCS pressure and swept into the reactor. Any void would not be

**Salem Nuclear Generating Station, Unit 1 Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

collapsing against a closed valve or dead ended pipe. The close proximity of installed vent valves being able to mitigate any possible future gas accumulation to a nominal size provides additional assurance that system function can be restored with little to no impact on performance.

The remaining improperly sloped piping, identified from prior walkdown activities (see Reference 4) as having one-half degree to one degree slope have been evaluated. The inspection of ECCS pipe slopes for Salem Unit 1 - Outside Containment and during 1R19 did not identify any field conditions that would create a potential unvented high point that would impair the operation of any ECCS. No emergent issues were identified concerning vent installations to maintain plant operability. Installed vent valves will be utilized to manage any possible future gas accumulation.

Based on the results of the drawing review (from Reference 4), ten (Unit 1) potential vent locations were identified for consideration to be added to fill and vent procedures. The proposed vent and confirmatory UT locations were evaluated and deemed to be enhancements to the current monthly required ECCS venting. The lines are adequately vented or swept void free during system restoration following a reactor shutdown/refueling and during pump quarterly surveillances in accordance with operating procedures and additional vents would provide only marginal benefits.

A total of nineteen (SNGS Unit 1) existing vent locations were identified during drawing reviews (from Reference 4) for consideration to be added to fill and venting operations. These proposed vent and confirmatory UT locations have been evaluated and deemed to be enhancements to the current monthly required ECCS venting. Additional venting locations would provide only marginal benefit as the lines are adequately vented or swept void free during system restoration following a reactor shutdown/refueling and during pump quarterly surveillances in accordance with operating procedures.

Periodic venting results to confirm that the systems are full of water are documented by procedure and maintained in the Document Control Records Management System (DCRMS). The Gas Voiding Program Manager monitors and trends gas voiding issues. This is accomplished through a quarterly review of completed surveillance

**Salem Nuclear Generating Station, Unit 1 Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"**

testing entries in DCRMS and a review of notifications identifying water hammer or gas voiding events.

**CONCLUSION**

All commitments identified for completion during 1R19 as identified in References 2 and 4 have been addressed.

PSEG Nuclear has evaluated previously unevaluated portions of the SNGS Unit 1 applicable systems that perform the functions described in GL 2008-01 and has confirmed that these systems are operable.