



FEB 08 2010

LR-N10-0014

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

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

Subject: **Nine-Month Supplemental (Unit 2 Post-Outage) Response to NRC Generic Letter 2008-01, "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 Systems (ECCS), Decay Heat Removal (DHR) system, and Containment Spray

A134
NRC

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 2 completed its confirmatory assessments of those inaccessible portions of these systems/functions during the past refueling outage 2R17 and is providing a supplement to the nine-month response in the enclosure. **(CM-U2-2008-100 and CM-U2-2008-101)**

All evaluations pertaining to Unit 2 entered into the CAP as described in the enclosure of Reference 4 have been completed and a supplemental response is being submitted in the enclosure. **(CM-U2-2008-101)**

In summary, with the completion of the 2R17 outage walkdowns, PSEG Nuclear has confirmed that the subject systems/functions at the SNGS Unit 2 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 2 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 2/8/2010

Sincerely,


Carl J. Fricker
Site Vice President – Salem

Enclosure: Salem Nuclear Generating Station, Unit 2 - 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".

C Mr. S. Collins, Administrator – Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

U. S. Nuclear Regulatory Commission
Mr. R. Ennis, Project Manager – Salem and Hope Creek
Mail Stop 08B3
Washington, DC 20555-0001

USNRC Senior Resident Inspector – Salem Nuclear Generating Station

Mr. P. Mulligan, Manager IV
Bureau of Nuclear Engineering
P. O. Box 415
Trenton, NJ 08625

Corporate Commitment Management Coordinator

Salem Commitment Management Coordinator

Salem Nuclear Generating Station, Unit 2 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 2 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 2 (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 enclosure)
- (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 (Reference 4) to be in the scope of GL 2008-01 for SNGS Unit 2:

- 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 2 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 2 completed its assessments of those inaccessible portions of these systems/functions during the past refueling outage 2R17 and is providing a supplement to the nine-month response (Reference 4) in this enclosure.

2R17 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 2R17 refueling outage,

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-half a degree or greater that were identified prior to SNGS Unit 2 outage 2R17 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 2R17 refueling outage 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:

- Four segments of the CVC System were found to be sloped in the improper direction
- Two segments of the RHR System were found to be sloped in the improper direction
- Three segments of the SJ System were found to be sloped in the improper direction

Salem Nuclear Generating Station, Unit 2 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"

It is noted that the walkdowns for the CS System were completed prior to the 2R17 outage and results were submitted in Reference 4.

Void size calculations were performed on the nine segments listed above using the arch area of the assumed 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 and evaluation of assumed voids for SNGS Unit 2 ECCS pipe slopes performed during 2R17 confirmed there are 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 2 outage 2R17 walkdowns and subsequent evaluations performed.

2. Corrective Actions Updates

SNGS Unit 2 evaluated implementation of the Pressurized Water Reactor Owners Group (PWROG) program methodologies and is establishing the applicable limits for gas accumulation in piping of the ECCS systems: CVC System - HHSI 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.

Salem Nuclear Generating Station, Unit 2 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"

3. Completed Corrective Actions

As committed in Reference 2, and approved by the NRC in Reference 3, SNGS Unit 2 completed its confirmatory assessments of those inaccessible portions of these systems/functions during the 2R17 refueling outage.

All CVC - HHSI System piping (suction and discharge piping) from the Refueling Water Storage Tank (RWST) to the injection point, 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 points and RHR – SDC Hot Leg Suction piping, 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, 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, required to be water-filled to perform its design basis function, was completely walked down prior to 2R17.

One potential vent location (one on Unit 2 SJ – IHSI 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. The pipe segment in question was 1.16 degrees sloped in the wrong direction and 8 feet in length. A conservative estimate of the potential void was 0.17 cubic feet and deemed to be nominal in size as not to impact the system operation if present. The close proximity of installed vent valves being able to mitigate any possible future gas accumulation provides additional assurance that the system function can be restored with little to no impact on system performance. (notification 20385350). Any 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 2 - Outside Containment and during 2R17 did not identify any field conditions that would create a potential unvented high point that would impair the operation of any

Salem Nuclear Generating Station, Unit 2 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"

ECCS. No emergent issues were identified concerning vent installations to maintain plant operability.

Based on the results of the drawing review (from Reference 4), eleven (Unit 2) potential vent locations were identified for consideration to be added to fill and vent procedures. The proposed vent locations and confirmatory UTs performed have been evaluated and deemed to be enhancements to the current monthly required ECCS venting. Additional vents 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.

A total of thirteen existing SNGS Unit 2 vent locations were identified during drawing reviews (from Reference 4) for consideration to be added to fill and venting procedures. These proposed vents 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 in the ECCS venting procedures 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 testing entries in DCRMS and a review of notifications identifying water hammer or gas voiding events.

CONCLUSION

All commitments identified for completion during 2R17 as identified in References 2 and 4 have been addressed.

PSEG Nuclear has evaluated previously unevaluated portions of the SNGS Unit 2 applicable systems that perform the functions described in GL 2008-01 and has confirmed that these systems are operable.