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

10 CFR 50.90

FEB 2 0 2007
LR-N07-0032

PSEG Nuclear LLC

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

SALEM GENERATING STATION – UNIT 1 AND UNIT 2
DOCKET NOS. 50-272 AND 50-311
FACILITY OPERATING LICENSE NOS. DPR-70 AND DPR-75

Subject: **RESPONSE TO RAIs ON LCR S06-06**
REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
CONTAINMENT VENTILATION SYSTEM
CONTAINMENT ISOLATION VALVES

References: (1) Letter from PSEG to NRC: LCR S06-06, "Request for Change to Technical Specifications, Containment Ventilation System, Containment Isolation Valves, Salem Nuclear Generating Station – Unit 1 and Unit 2, Docket Nos. 50-272 and 50-311, Facility Operating License Nos. DPR-70 and DPR-75," dated August 4, 2006

In accordance with the requirements of 10 CFR 50.90, PSEG Nuclear LLC (PSEG) previously submitted License Change Request (LCR) S06-06, dated August 4, 2006, to amend the Technical Specifications (TS) for Salem Generating Station Unit 1 and Unit 2 (Reference 1). LCR S06-06 proposed to revise TS 3.6.3.1 (TS 3.6.3 for Unit 2) to allow a blind flange to be used for containment isolation in each of the two flow paths (supply and exhaust) of the containment purge system in Modes 1 through 4 without remaining in TS 3.6.3.1 Action C. In addition, the requirements of TS 3.6.1.7 would be relocated to TS 3.6.3.1 (TS 3.6.3 for Unit 2) in order to integrate the TS containment isolation requirements for the containment purge system.

PSEG received a Request for Additional Information (RAI) from the NRC Staff on LCR S06-06. PSEG and the NRC Staff discussed the RAIs in a telecon on February 8, 2007. Based on telecon discussion, the responses to the RAIs are provided in Attachment 1. Additional changes to the TS Bases are provided in Attachment 2.

Please note that the original requested date for this License amendment was March 1, 2007 (as provided in Reference 1). PSEG requests a revised amendment date of March 27, 2007 to support the Salem Unit 1 Spring outage.

A034

If you have any questions or require additional information, please do not hesitate to contact Mr. Jamie Mallon at (610) 765-5507.

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

Executed on 2/20/07
(Date)

Sincerely,

Thomas P. Joyce
Site Vice President
Salem Generating Station

Attachments (2)

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

Mr. R. Ennis, Licensing Project Manager - Salem
U. S. Nuclear Regulatory Commission
Mail Stop 08B1
Washington, DC 20555

USNRC Senior Resident Inspector – (Salem X24)

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

RESPONSE TO LCR S06-06 RAIs

REQUEST FOR ADDITIONAL INFORMATION

REGARDING PROPOSED LICENSE AMENDMENT

CONTAINMENT PURGE SYSTEM

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

By letter dated August 4, 2006, PSEG Nuclear LLC (the licensee) submitted an amendment request for Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem). The proposed amendment would allow the use of blind flanges for containment isolation in the containment purge system supply and exhaust lines, and make corresponding changes to the Technical Specifications (TS). The amendment would also consolidate the containment isolation requirements by moving the requirements of TS 3/4 6.1.7, "Containment Ventilation System," to TS 3/4 6.3.1 (TS 3/4 6.3 for Unit No. 2), "Containment Isolation Valves."

The Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee provided that supports the proposed amendment and would like to discuss the following issues to clarify the submittal.

1) The licensee has stated that the containment purge supply inboard valve and the purge exhaust inboard valve will be replaced by blind flanges. By doing so, the licensee stated that the outboard purge supply and purge exhaust valves will no longer require Appendix J type testing. In the TS changes to Sections 3/4.6.3.1 (applicable to modes 1, 2, 3 and 4), the licensee states that a containment purge valve is not a required containment isolation valve when the flow path is isolated by a blind flange. However, the TS continues to discuss limiting conditions and surveillance requirements applicable to required containment purge isolation valves. Since the valves become required isolation valves only when the blind flanges are removed, and when the blind flanges are removed, what would provide the second isolation for each penetration? Will the inboard isolation valves be reinstalled under this condition? The NRC staff would like to have some more information of the licensee's intent of the "required containment purge isolation valve" discussions in the TS changes submitted.

RESPONSE

The blind flanges will only be removed in MODES 5 and 6. In MODES 1-4 they will be installed and serve as the containment boundary -- as required by the revised Salem

Appendix J program and UFSAR Table 6.2-10. Once the plant design change is implemented, the blind flanges must be installed in MODES 1-4 unless the plant design configuration is changed again by an approved process.

The use of the terminology "required containment purge isolation valve" serves two purposes:

- "Pre-implementation" purpose: This LCR is for both Salem Units 1 and 2; the actual plant design changes will be consecutive with Unit 1 scheduled for Spring 2007, Unit 2 Spring 2008. As such, the TS need to allow for the pre-design change configuration; i.e., prior to installation of the blind flange design change for both Units.

- "Post-implementation" purpose: The design change to install the blind flanges is necessary at this time to address the current situation of the existing valves. However, this may not be the final, optimal design change for these penetrations. While there are no current plans for any other changes, PSEG may determine, in the future, that a new valve design is readily available and cost-effective. A re-design for use of both inboard and outboard valves (that can meet MODES 1-4 testing requirements) may be a more optimal design for all MODES of operation. As such, the TS need to allow for this possibility, which again would be controlled by an approved design change process, the Appendix J program and UFSAR Table 6.2-10.

The following additional clarification is provided on language provided in Section 5.2 of Attachment 1 of the LCR discussing the current requirements for TS 3.6.3.1.c (3.6.3.c Unit 2). TS 3.6.3.1.c states:

"With one or more of the containment isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or ..."

Section 5.2 of Attachment 1 of the LCR stated that: "Currently, TS 3.6.3.1 (TS 3.6.3 for Unit 2), Action C allows a blind flange to be used to isolate a purge valve flow path when one or both of the purge valves in that flow path is not within leakage limits.." The words "or both" were inadvertently included. The correct wording for the requirement was included in Section 1 of Attachment 1 of the LCR: "Currently TS 3.6.3.1 (TS 3.6.3 for Unit 2) Action C requires that with one or more of the isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is

open and isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange. " The requirement "*maintain at least one isolation valve OPERABLE*" is applicable when a blind flange installed. Under the current TS, if a blind flange is used in place of one inoperable valve, the remaining valve is tested and verified operable.

2) The licensee has stated that "the outboard supply and exhaust valves will continue to meet the isolation requirements of TS 3.9.4.c, and will isolate on: (1) a Containment Purge and Pressure-Vacuum Relief isolation signal as required by TS SR 4.6.3.1.2.d for Unit 1 and TS 4.6.3.1.2.d for Unit 2, ..." TS 3.9.4.c applies to Refueling Operations and TS SR 4.6.3.1.2.d applies to Modes 1, 2, 3 and 4. The Bases for TS 3/4.9 REFUELING OPERATIONS states that if required, containment purge isolation can be initiated manually from the control room. The new configuration appears to be a relaxation of the TSs since there is only one valve for each penetration available for manual isolation from the control room, where as there were two valves available prior to the intended change (unless it is the intent of the licensee to install the inboard valve during refueling operations). Please address these concerns.

RESPONSE

The reference to TS 4.6.3.1.2.d (4.6.3.2.d for Unit 2) was made in error. The correct reference is TS 3.9.4 and TS SR 4.9.4.3 (applicable during the movement of irradiated fuel) which states:

> *"Verify, once per 18 months, each required containment purge isolation valve actuates to the isolation position on a manual actuation signal"*

TS 3.9.4 provides containment closure requirements during the movement of irradiated fuel; these requirements are less stringent than the MODES 1-4 requirements. The Bases for TS 3.9.4 require only one isolation valve in this MODE, consequently, having only one valve in service is not a relaxation of requirements. The applicable portions of Bases Section 3.9.4 are provided below:

- "Therefore, the requirements to isolate the containment from the outside atmosphere can be less stringent. The LCO requirements during movement of irradiated fuel assemblies within containment are referred to as "containment closure" rather than containment OPERABILITY. For the containment to be OPERABLE, CONTAINMENT INTEGRITY must be maintained. Containment closure means that all potential release paths are closed or capable of being closed."

- "The other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated on <u>at least one side</u>. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a

manual isolation valve, blind flange, or equivalent. Equivalent isolation methods may include the use of a material that can provide a temporary atmospheric pressure, ventilation barrier.

3) The TS changes submitted show that the TS 3/4.6.1.7 requirements will be deleted in their entirety and relocated to TS 3/4.6.3.1. However, Bases 3/4.6.1.7 was kept with changes shown to this section. To avoid any potential confusion, the licensee should delete Bases Section 3/4.6.1.7 and relocate the information to Bases Section 3/4.6.3.

RESPONSE

- This was on oversight; Bases Section 3/4.6.1.7 will be relocated to 3/4.6.3, as shown in Attachment 2 to this submittal.

PROPOSED CHANGES TO TS BASES PAGES

The following Technical Specifications Bases for Salem Generating Station Unit 1 and Unit 2, Facility Operating License Nos. DPR-70 and DPR-75 are affected by this change request:

Technical Specification	Page
Bases 3/4 6.1.7	B 3/4 6-2
Bases 3/4 6.3	B 3/4 6-4

3/4.6.1.4 INTERNAL PRESSURE

The limitations on containment internal pressure ensure that: 1) the containment structure is prevented from exceeding its design negative pressure differential with respect to the outside atmosphere of 3.5 psig and 2) the containment peak pressure does not exceed the design pressure of 47 psig during the limiting pipe break conditions. The pipe breaks considered are LOCA and steam line breaks.

The limit of 0.3 psig for initial positive containment pressure is consistent with the accident analyses initial conditions.

The maximum peak pressure expected to be obtained from a LOCA or steam line break event is ≤ 47 psig.

3/4.6.1.5 AIR TEMPERATURE

The limitations on containment average air temperature ensure that the overall containment average air temperature does not exceed the initial temperature condition assumed in the accident analysis for a LOCA or steam line break. In order to determine the containment average air temperature, an average is calculated using measurements taken at locations within containment selected to provide a representative sample of the overall containment atmosphere.

3/4.6.1.6 CONTAINMENT STRUCTURAL INTEGRITY

This limitation ensures that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to ensure that the containment will withstand the design pressure. The visual inspections of the concrete and liner and the Type A leakage test both in accordance with the Containment Leakage Rate Testing Program are sufficient to demonstrate this capability.

~~3/4.6.1.7 CONTAINMENT VENTILATION SYSTEM~~ RELOCATED TO 3/4 6.3

~~The containment purge supply and exhaust isolation valves are required to be closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA. Maintaining these valves (or equivalent isolation device) closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system.~~

valve response time test ensures that on a loss of offsite power, each discharge valve actuates to the open position in accordance with the design to allow sufficient tank discharge into CFCU piping to maintain water filled, subcooled fluid conditions in three CFCU cooling loops, assuming the most limiting single failure.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The opening of locked or sealed closed containment isolation valves (penetration flow paths) on an intermittent basis under administrative control includes the following considerations: (1) stationing a dedicated individual, who is in constant communication with the control room, at the valve controls, (2) instructing this individual to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The main steam isolation valves (MSIVs) fulfill their containment isolation function as remote-manual containment isolation valves. The automatic closure of the MSIVs is not required for containment isolation due to having a closed system inside containment. The remote-manual containment isolation function of the MSIVs can be accomplished through either the use of the hydraulic operator or when the MSIV has been tested in accordance with surveillance requirement 4.7.1.5 the steam assist function can be credited.

Surveillance Requirement (SR) 4.6.3.1.3 only applies to the MS7 (Main Steam Drain) valves and the MS18 (Main Steam Bypass) valves. The MS167 (Main Steam Isolation) valves are tested for main steam isolation purposes by SR 4.7.1.5. For containment isolation purposes, the MS167s are tested as remote/manual valves pursuant to Specification 4.0.5.

The containment purge supply and exhaust isolation valves are required to be closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA. Maintaining these valves (or equivalent isolation device) closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system.

A containment purge valve is not a required containment isolation valve when its flow path is isolated with a blind flange tested in accordance with SR 4.6.1.2.b The inboard valve of both the containment purge supply and exhaust penetrations has been replaced with a testable, double o-ring blind flange. The blind flange serves as the containment boundary and performs the containment integrity function in Modes 1, 2, 3, and 4. The outboard valve of both the containment purge supply and exhaust penetrations performs no containment integrity function in MODES 1-4; these valves operate during shutdown for normal system purging and containment closure when the blind flanges are removed.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with 1) zirconium-water reactions, 2) radiolytic decomposition of water and 3) corrosion of metals within containment.

3/4.6.1.4 INTERNAL PRESSURE

The limitations on containment internal pressure ensure that: 1) the containment structure is prevented from exceeding its design negative pressure differential with respect to the outside atmosphere of 3.5 psig, and 2) the containment peak pressure does not exceed the design pressure of 47 psig during the limiting pipe break conditions. The pipe breaks considered are LOCA and steam line breaks.

The limit of 0.3 psig for initial positive containment pressure is consistent with the accident analyses initial conditions.

The maximum peak pressure expected to be obtained from a LOCA or steam line break event is ≤ 47 psig.

3/4.6.1.5 AIR TEMPERATURE

The limitations on containment average air temperature ensure that the overall containment average air temperature does not exceed the initial temperature condition assumed in the accident analysis for a LOCA or steam line break. In order to determine the containment average air temperature, an average is calculated using measurements taken at locations within containment selected to provide a representative sample of the overall containment atmosphere.

3/4.6.1.6 CONTAINMENT STRUCTURAL INTEGRITY

This limitation ensures that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the facility. Structural integrity is required to ensure that the containment will withstand the design pressure. The visual inspections of the concrete and liner and the Type A leakage test, both in accordance with the Containment Leakage Rate Testing Program, are sufficient to demonstrate this capability.

~~3/4.6.1.7 CONTAINMENT VENTILATION SYSTEM~~ RELOCATED TO 3/4 6.3

~~The containment purge supply and exhaust isolation valves are required to be closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA. Maintaining these valves closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system.~~

The surveillance requirements for the service water accumulator vessels ensure each tank contains sufficient water and nitrogen to maintain water filled, subcooled fluid conditions in three containment fan coil unit (CFCU) cooling loops in response to a loss of offsite power, without injecting nitrogen covergas into the containment fan coil unit loops assuming the most limiting single failure. The surveillance requirement for the discharge valve response time test ensures that on a loss of offsite power, each discharge valve actuates to the open position in accordance with the design to allow sufficient tank discharge into CFCU piping to maintain water filled, subcooled fluid conditions in three CFCU cooling loops, assuming the most limiting single failure.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The opening of locked or sealed closed containment isolation valves (penetration flow paths) on an intermittent basis under administrative control includes the following considerations: (1) stationing a dedicated individual, who is in constant communication with the control room, at the valve controls, (2) instructing this individual to close these valves in an accident situation, and (3) assuring that the environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The main steam isolation valves (MSIVs) fulfill their containment isolation function as remote-manual containment isolation valves. The automatic closure of the MSIVs is not required for containment isolation due to having a closed system inside containment. The remote-manual containment isolation function of the MSIVs can be accomplished through either the use of the hydraulic operator or when the MSIV has been tested in accordance with surveillance requirement 4.7.1.5 the steam assist closure function can be credited.

Surveillance Requirement (SR) 4.6.3.3 only applies to the MS7 (Main Steam Drain) valves and the MS18 (Main Steam Bypass) valves. The MS167 (Main Steam Isolation) valves are tested for main steam isolation purposes by SR 4.7.1.5. For containment isolation purposes, the MS167s are tested as remote/manual valves pursuant to Specification 4.0.5.

The containment purge supply and exhaust isolation valves are required to be closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA. Maintaining these valves closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the containment purge system.

A containment purge valve is not a required containment isolation valve when its flow path is isolated with a blind flange tested in accordance with SR 4.6.1.2.b. The inboard valve of both the containment purge supply and exhaust penetrations has been replaced with a testable double o-ring blind flange. The blind flange serves as the containment boundary and performs the containment integrity function in Modes 1, 2, 3, and 4. The outboard valve of both the

containment purge supply and exhaust penetrations performs no containment integrity function in MODES 1-4; these valves operate during shutdown for normal system purging and containment closure when the blind flanges are removed.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with 1) zirconium-water reactions, 2) radiolytic decomposition of water, and 3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.