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U. S. Nuclear Regulatory Commission  
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**180-DAY RESPONSE TO GENERIC LETTER 2003-01  
CONTROL ROOM HABITABILITY  
SALEM UNIT NOS. 1 AND 2 AND HOPE CREEK  
FACILITY OPERATING LICENSE NOS. DPR-70, DPR-75 AND NPF-57  
DOCKET NOS. 50-272, 50-311, AND 50-354**

On June 12, 2003, the NRC issued Generic Letter (GL) 2003-01, "Control Room Habitability." GL 2003-01 requires each plant to confirm that their facility's control room meets the applicable habitability regulatory requirements and that the Control Room Habitability Systems (CRHSs) are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing basis. Attached is the information requested in the 180-Day Response.

Should you have any questions regarding this submittal, please contact Mr. Courtney Smyth at 856-339-5298.

Sincerely,

A handwritten signature in black ink that reads "David F. Garchow". The signature is written in a cursive style with a large initial "D".

David F. Garchow  
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A102

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**180-DAY RESPONSE TO GENERIC LETTER 2003-01  
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**1. Provide confirmation that your facility's control room meets the applicable habitability regulatory requirements (e.g., GDC 1, 3, 4, 5, and 19) and that the CRHSs are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing bases. Emphasis should be placed on confirming:**

- (a) That the most limiting unfiltered inleakage into your CRE (and the filtered inleakage if applicable) is no more than the value assumed in your design basis radiological analyses for control room habitability. Describe how and when you performed the analyses, tests, and measurements for this confirmation.**

**Response to 1(a):**

**SALEM**

The Salem Control Room Envelope (CRE) is a common envelope for both Salem Units 1 and 2. With the exception of the Fuel Handling Accident (FHA), the dose analyses for Salem assumed a CRE inleakage value of 60 cfm unfiltered inleakage. The FHA dose analysis was revised utilizing alternative source term (AST) in accordance with 10CFR50.67 and approved in Amendment 251 for Salem Unit 1 and 232 for Salem Unit 2. The revised FHA dose analysis assumes a CRE inleakage value of 4000 cfm. For Salem Units 1 and 2, tracer gas testing was performed from May 31 to June 4, 2003, to measure the inleakage to the Salem CRE. The Salem Control Room Emergency Air Conditioning System (CREACS) can be aligned to respond to a design basis radiological accidents with either a single train (either Unit 1 or Unit 2 train) operating by itself or with both trains operating to pressurize the control room. The recirculation mode operation of CREACS is for toxic chemical events and smoke events and is not used during a DBA radiological event. Five tests were performed. Three tests were performed in single train alignment of CREACS in its pressurization mode (two with the Unit 1 train operating by itself and one with the Unit 2 train operating by itself), one test was performed with both CREACS trains operating in its pressurization mode, and one test was performed in the recirculation mode. The results of the tracer gas testing identified that two of the four test results for pressurization were below 60 cfm unfiltered inleakage (both tests were Unit 1 single train configuration) and two tests (Unit 2 single train and both trains configuration) measured unfiltered inleakage in the range of 90 to 100 cfm. Based on the results of the tracer gas testing, a GL 91-18 operability determination was issued for the non-FHA dose analyses that addressed the increased measured inleakage stating that the Salem CRE was operable, but

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non-conforming. To terminate the operability determination, PSEG is planning to perform a full conversion of the Salem dose analysis to AST. Preliminary work performed on the conversion to AST indicates that the unfiltered inleakage assumed in the dose analysis can be increased to bound the measured inleakage value without exceeding the limits of 10CFR50 Appendix A General Design Criterion 19 (GDC-19). As noted above, the FHA analysis has already been converted to AST. A license change request to convert the dose analysis to AST is currently planned to be submitted by the end of February 2004.

**HOPE CREEK**

At Hope Creek the Control Room Supply (CRS) system normally maintains the control room at a slightly positive pressure with respect to adjacent areas to inhibit air leakage into the control room. The Control Room Emergency Filtration (CREF) system is designed to maintain control room habitability by providing filtration of fresh air and recirculated air during any accident that may release high radioactivity while maintaining the control room pressure above that of adjacent areas.

The Fuel Handling Accident (FHA) and loss-of-coolant accident (LOCA) radiological consequence analyses were revised using an alternative source term (AST) in accordance with 10CFR50.67 and approved in Amendment 146. The FHA analysis does not credit initiation of the CREF system (that is, it is assumed that the ventilation system remains in its normal alignment). However, the LOCA analysis assumes a 30-minute transition period for CREF system initiation during which an inleakage rate of 500 cfm is assumed. The LOCA analysis assumes an inleakage rate of 350 cfm following the 30-minute transition period for CREF system initiation.

Tracer gas air inleakage testing was performed in July 2001 in order to assess the amount of air inleakage into the Hope Creek CRE. Air inleakage was measured with the CREF system operating in the pressurization mode (the alignment for radiological events) and the recirculation mode (the isolation mode for fires or hazardous chemical events). The testing results identified that inleakage was less than 210 cfm in the pressurization mode and less than 325 cfm in the recirculation mode. These amounts are less than the amount of unfiltered outside air that is assumed to enter the CRE in the design basis radiological consequence analyses.

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**(b) That the most limiting unfiltered inleakage into your CRE is incorporated into your hazardous chemical assessments. This inleakage may differ from the value assumed in your design basis radiological analyses. Also, confirm that the reactor control capability is maintained from either the control room or the alternate shutdown panel in the event of smoke.**

**Response to 1(b):**

As stated in the 60-day response to GL 2003-01, letter LR-N03-0315 dated August 8, 2003, PSEG has assessed the hazardous chemicals for both Salem and Hope Creek incorporating the unfiltered inleakage measured from tracer gas testing performed for Salem in June 2003 and Hope Creek in July 2001. Based on the results of the assessments, no changes to the operation of Salem and Hope Creek were required as a result of including the measured unfiltered inleakage values into the hazardous chemical assessments. The assessments used the acceptance criteria of Regulatory Guide 1.78, Revision 1, December 2001 "Evaluating The Habitability Of A Nuclear Power Plant Control Room During Postulated Hazardous Chemical Release". The hazardous chemical assessments are available on site for NRC review.

PSEG has performed assessments of reactor control from the control room and remote shutdown locations in the event of smoke for Salem and Hope Creek. These assessments demonstrate that reactor control capability is maintained from either the control room or remote shutdown areas in the event of smoke. These assessments are available on site for NRC review.

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**(c) That your technical specifications verify the integrity of the CRE, and the assumed inleakage rates of potentially contaminated air. If you currently have a  $\Delta P$  surveillance requirement to demonstrate CRE integrity, provide the basis for your conclusion that it remains adequate to demonstrate CRE integrity in light of the ASTM E741 testing results. If you conclude that your  $\Delta P$  surveillance requirement is no longer adequate, provide a schedule for: 1) revising the surveillance requirement in your technical specification to reference an acceptable surveillance methodology (e.g., ASTM E741), and 2) making any necessary modifications to your CRE so that compliance with your new surveillance requirement can be demonstrated.**

**If your facility does not currently have a technical specification surveillance requirement for your CRE integrity, explain how and at what frequency you confirm your CRE integrity and why this is adequate to demonstrate CRE integrity.**

**Response to 1(c):**

The Salem and Hope Creek Technical Specifications currently only require the performance of  $\Delta P$  surveillance testing to demonstrate control room envelope integrity. PSEG concludes that the current Technical Specifications for Salem and Hope Creek should be upgraded consistent with the guidelines of Technical Specification Task Force (TSTF) Traveler TSTF-448. The proposed changes will be submitted 3 months after NRC approval of TSTF-448. The proposed changes will include periodic tracer gas testing requirements, actions to be taken in the event of CRE inleakage exceeding limits, actions to be taken in the event of the control room boundary being inoperable for reasons other than inleakage exceeding limits, as well as a control room integrity program. Based upon the current edition (Revision 1) of TSTF-448, no modifications to the Salem or Hope Creek CRE will be necessary to comply with the revised surveillance requirements.

Until the CRE Technical Specification revisions proposed by PSEG under TSTF-448 for Hope Creek and Salem are approved, control room integrity for Hope Creek and Salem will be periodically demonstrated as specified in Figure 1 of Regulatory Guide 1.197, Revision 0, May 2003. The beginning of the demonstration interval commences with the completion dates of the tests described in response to 1(a) above. The provisions of Surveillance Requirement 4.0.2 will be applied.

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- 2) If you currently use compensatory measures to demonstrate control room habitability, describe the compensatory measures at your facility and the corrective actions needed to retire these compensatory measures.**

**Response to 2:**

Compensatory measures are not required for Hope Creek. Compensatory measures for Salem are in the form of calculations in a GL 91-18 operability determination (using TID 14844 source term) as described in response to 1(a) above. To terminate the operability determination, PSEG is planning to perform a full conversion of the Salem dose analysis to AST. Preliminary work performed on the conversion to AST indicates that the unfiltered inleakage assumed in the dose analysis can be increased to bound the measured inleakage value without exceeding the limits of 10CFR50 Appendix A General Design Criterion 19 (GDC-19). A license change request to convert the dose analysis to AST is currently planned to be submitted by the end of February 2004.

- 3) If you believe that your facility is not required to meet either the GDC, the draft GDC, or the "Principal Design Criteria" regarding control room habitability, in addition to responding to 1 and 2 above, provide documentation (e.g., Preliminary Safety Analysis Report, Final Safety Analysis Report sections, or correspondence) of the basis for this conclusion and identify your actual requirements.**

**Response to 3:**

Both Salem and Hope Creek are required to meet GDC 19 of 10CFR50 Appendix A.