

August 11, 2006

Mr. William Levis  
Senior Vice President & Chief Nuclear Officer  
PSEG Nuclear LLC - N09  
Post Office Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NO. 2 - APPROVAL OF  
GENERIC LETTER 2004-02 EXTENSION REQUEST (TAC NO. MC4713)

Dear Mr. Levis:

In a June 7, 2006, updated response to the Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," PSEG Nuclear LLC (PSEG or the licensee) provided updated information on its ongoing activities for resolution of the Generic Safety Issue (GSI)-191 containment sump clogging issue. In addition to reporting on certain completed additional actions taken in response to GL 2004-02, PSEG requested an extension beyond December 31, 2007, for removal of certain insulation in the containment of Salem Nuclear Generating Station (Salem), Unit No. 2, until the next refueling outage scheduled to begin on March 12, 2008. This results in an extension of approximately 10 weeks.

PSEG stated that a design change package for Salem Unit No. 2 has been issued for installation of a 5300 square foot strainer with 1/12-inch openings during the fall 2006 outage. PSEG also stated that trisodium phosphate is not used as a pH buffer at Salem, reducing the expectation of significant quantities of chemical precipitate as discussed in NRC Information Notice (IN) 2005-26 and IN 2005-26, Supplement 1. PSEG stated that it will remove all calcium silicate within the loss-of-coolant accident (LOCA) zones of influence by December 31, 2007. PSEG further stated that, as a result of a planned July 2006 loop testing of representative fiber, combined with Salem-specific chemical precipitates (from interactions with the sodium hydroxide pH buffer), the new strainer design was expected to have adequate margin for chemical effects. PSEG stated that the Salem downstream-effects evaluations have been completed and have been found acceptable for ex-vessel blockage and wear of downstream components.

PSEG discussed a non-Salem-specific, conservative Westinghouse initial scoping evaluation of the long-term core coolability of the fuel with fibrous and particulate debris in the recirculation fluid. The evaluation concluded that passage of about one cubic foot or more of fibrous debris could result in a thin-bed effect at the bottom of the fuel. PSEG stated that testing performed with the replacement strainer design for Salem with the current (non-calcium silicate insulation) fiber load has demonstrated a fibrous debris bypass of approximately five cubic feet. PSEG stated that there were ongoing actions underway to address this discrepancy:

- PSEG discussions with Westinghouse indicated that the assumptions for the formation of a 1/8-inch fiber bed at the bottom of the fuel are conservative, and can possibly be relaxed when considering the physical characteristics of the actual fibrous debris that would bypass the strainer. The vendor test results show that 90% of the Salem bypass fibers are relatively short (.004 to .04 inches) compared to fuel bottom nozzle flow holes of 0.2 inches. The licensee stated that these fibers will not mat across the fuel bottom nozzles, as was assumed in the Westinghouse scoping evaluation.
- Westinghouse is developing Salem-specific acceptance criteria to quantify the acceptable amount of fiber bypass for long-term cooling, but the analyses are not expected to be completed until as late as September 2006. PSEG stated that it expects the results from the Salem bypass testing to be acceptable under these revised acceptance criteria.

PSEG stated that it was confident that no additional insulation would need to be removed to comply with the expected new allowable fiber bypass acceptance criteria. However, assuming that application of the Salem-specific fiber bypass acceptance criteria results in a need to remove additional insulation, two sets of insulation would need to be replaced. PSEG requested to defer replacement of this insulation for the following reasons:

- One set of insulation that would need to be replaced is the steam generator insulation. PSEG has scheduled replacement of the Salem Unit No. 2 steam generators during the spring 2008 outage. The replacement steam generators are to be insulated with custom-engineered reflective metal insulation. If the current Salem Unit No. 2 steam generators insulation were to be replaced in the normally-scheduled fall 2006 refueling outage, the new insulation would need to be removed and replaced again when the steam generators are replaced in the spring 2008 outage. PSEG stated that this would result in 22 REM of additional exposure, and generation of approximately 1800 cubic feet of radiological waste.
- The other set of insulation that would need to be replaced is the pressurizer and pressurizer piping insulation. PSEG stated that replacing this insulation will result in approximately 50 REM of additional exposure.

PSEG stated that the likelihood of a LOCA would be low during the requested extension period (January 1 to March 12, 2008). The NRC staff notes that Salem Unit No. 2 has been accepted as leak-before-break reactor primary coolant loop plant, as was discussed in an NRC letter to PSEG dated May 25, 1994. PSEG stated that the small incremental risk during the requested extension period resulting from not installing interim insulation would more than offset avoidance of additional radiation exposure to plant workers.

The NRC has confidence that PSEG has a plan that will result in the installation of final modifications that provide acceptable strainer function with adequate margin for uncertainties to resolve the GSI-191 containment sump clogging issue. Further, the NRC has concluded that PSEG has put mitigation measures in place to adequately reduce risk for the requested short extension period. Therefore, the NRC concludes that it is acceptable to extend the completion date for the corrective actions (specifically, the replacement of insulation on the steam generators, pressurizer, and pressurizer piping) for the issues discussed in GL 2004-02 until the completion of the Salem Unit No. 2 spring 2008 refueling outage, which is currently scheduled

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to begin approximately March 12, 2008. Should PSEG elect to begin the Salem, Unit No. 2 outage more than 30 days after March 12, 2008, PSEG will need to provide the NRC additional justification for further delay in completing corrective actions for GL 2004-02.

If you have any questions regarding this matter, please contact me at 301-415-1321, or at [snb@nrc.gov](mailto:snb@nrc.gov).

Sincerely,

**/RA/**

Stewart N. Bailey, Senior Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-311

cc: See next page

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