

June 26, 2001

LICENSEE: PSEG Nuclear LLC

FACILITY: Salem Nuclear Generating Station, Unit Nos. 1 and 2

SUBJECT: SUMMARY OF MEETING BETWEEN THE NUCLEAR REGULATORY  
COMMISSION STAFF AND PSEG NUCLEAR LLC ON APRIL 5, 2001 (TAC  
NOS. M98190 AND M98191)

On Thursday, April 5, 2001, at 9:30 a.m., a meeting was held between members of the Nuclear Regulatory Commission (NRC) staff and representatives of PSEG Nuclear LLC (PSEG), the licensee for the Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem). The purpose of the meeting was to discuss the status of PSEG's Electrical Cable Raceway Fire Barrier Project, and other related fire protection issues. The meeting was open to interested members of the public, petitioners, intervenors, or other parties to attend as observers pursuant to the "Commission Policy Statement on Staff Meetings Open to the Public" (see 65 FR 56964, dated September 9, 2000). The discussion lasted approximately 2 hours. A list of attendees is provided as Enclosure 1 to the meeting summary.

#### BACKGROUND

Between May 17 and 26, 1993, the NRC conducted a Fire Protection Inspection at Salem. The inspection team identified and raised several concerns involving the design, qualification, and testing associated with the three types of insulating fire barriers covering electrical cable trays and raceways. At that time, Salem had been using Kaowool, 3M FS-195, and 3M Interam E-50 fire wrap material. The inspection team concluded that the qualifications associated with the three fire barrier systems could not be determined. These issues were later documented as Unresolved Items (UIs) in NRC Inspection Report Nos. 50-272/93-80 and 50-311/93-80 dated October 14, 1993; however, no violations were identified.

Between April 14 and 18, 1997, the NRC performed a Fire Protection Follow-up Inspection at Salem. The inspection team found that the qualification status of each fire barrier type remained essentially unchanged since the May 1993 inspection. The NRC issued Inspection Report No. 50-272; 50-311/97-09 on June 3, 1997, documenting its findings discovered during the inspection conducted in April 1997.

By letter dated June 6, 1997, PSEG (known at that time as the Public Service Electric and Gas Co., or PSE&G) notified the NRC that it had formally established a "Cable Raceway Fire Wrap Resolution Plan." In its letter, PSEG stated that it would be resolving the issues surrounding the qualifications of the fire barrier systems in three phases: (1) Phase 1, Engineering Scoping and Evaluation; (2) Phase 2, Design Change Package Preparation and Resolution of Issues; and (3) Phase 3, Design Change Implementation. PSEG further indicated that it expected to take three refueling outages to implement the identified modifications. As a result, design modifications for Salem Unit No. 2 would be accomplished by the end of its spring 2002 outage, and modifications for Salem Unit No. 1 would be completed by the end of 2002.

In addition, the NRC recently identified, and documented as a White Finding, the failure of Salem, Unit No. 2, 4160 VAC Switchgear Room CO2 fire suppression system to meet CO2 concentration requirements in violation of fire protection license conditions. Inspection Report Nos. 50-272/1999-010 and 50-311/1999-010, dated February 14, 2000, documents the NRC's findings. Representatives from Region I, Division of Reactor Safety, also participated in the April 5, 2001, meeting by telephone in order to evaluate PSEG's regulatory performance as a follow-up to the recent White Finding.

## MEETING SUMMARY

The meeting focused on the results of PSEG's engineering evaluation for the Raceway Fire Barrier Project. The licensee began its presentation with a brief summary of the project's background and scope. PSEG stated that it had completed walk downs of all fire areas that have fire wrap material installed, performed baseline testing of the ES-195 and E-50 fire wrap material, and completed a reanalysis to determine the vulnerability of systems required for the safe shutdown of Salem in the event of a fire. The safe shutdown analysis included an evaluation of offsite power sources, an analysis of circuits by component, as well as an assessment of operator manual actions. PSEG also indicated that it had used the Generic Letter (GL) 86-10 position on "hot shorts" in the circuit analysis. As a result, PSEG identified that it was necessary to rely on approximately 6,500 feet of the roughly 20,000 feet of fire wrap material installed at Salem, to meet the 1-hour safe shutdown requirement.

PSEG further stated that it considered the following three options to resolve the fire wrap issue:

- Upgrade the fire wrap material per the revised safe shutdown analysis;
- Evaluate the current configuration using risk-informed and performance-based methods in order to minimize the amount of fire wrap material that needed replacement; and
- Study the feasibility of installing a cross-tie (piping) system between each unit's charging system boric acid storage tanks (BATs), and cross-ties between the volume control tanks (VCTs) and refueling water storage tanks (RWSTs). The purpose of the cross-ties would be to minimize Salem's reliance on fire wrap material necessary to provide a 1-hour barrier to allow for safe shutdown in the event of a fire at one of the plants.

Based on its evaluation of the three options, PSEG said that it had chosen the option of installing mechanical (piping) cross-ties between the BATs, VCTs and RWSTs, and a power supply cross-tie between the Unit No. 1 Hot Shutdown (HSD) panel and the Unit No. 2 HSD panel. The mechanical cross-ties will provide an additional source for: (1) Reactor Coolant System (RCS) make-up; (2) Reactor Coolant Pumps seal injection; and (3) RCS boration. The HSD cross-tie is intended to provide an additional redundant power source for each unit's HSD panel. For additional details on the cross-ties, see Enclosure 2, Meeting Handout, Figures 1 and 2. PSEG maintained that the cross-tie option will reduce the reliance on fire wrap material in its analysis, thus reducing the amount of material that will require replacement, and improve plant safety according to a risk analysis. A preliminary risk analysis showed an approximate 9% reduction in overall core damage frequency (CDF) and large early release frequency.

The staff questioned PSEG representatives about the modification's impact, including how a possible lack of a 1-hour fire barrier in the 4160-volt vital switchgear room, 460-volt vital switchgear room, and the 84' level vital pump room would affect compliance with 10 CFR Part 50, Appendix R, Section III.G.2, and whether these rooms would be reclassified as "Section III.G.3 areas." PSEG indicated that it would take a close look at compliance with these regulations and any associated exemptions to ensure that compliance is achieved upon completion of the project.

PSEG further stated that the cross-tie design modifications would be performed under Title 10 of the *Code of Federal Regulations*, Section 50.59. Field installation of piping and new control circuitry would be performed during each unit's next refueling outage. The current schedule shows the completion for the entire project at the end of 2002. As a result, PSEG's commitment to complete the Salem Unit No. 2 modifications will be changed from the spring of 2002 to coincide with the revised project completion date. The staff acknowledged the licensee's presentation and change in commitment date.

For additional information concerning the meeting and PSEG's Electrical Cable Raceway Fire Barrier Project, please contact the Salem Project Manager, Robert Fretz, at 301-415-1324.

*/RA/*

Robert J. Fretz, Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosures: 1. Meeting Attendees  
2. Meeting Handout

cc w/encl: See next page

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**/RA/**

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ACCESSION NO. ML011430238

OFFICE	PDI-2/PM	PDI-2/LA	PDI-2/SC
NAME	RFretz	TClark	JClifford
DATE	6/22/01	6/22/01	6/25/01

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**MEETING ATTENDEES**  
**Salem Nuclear Generating Station**  
**Electrical Cable Raceway Fire Barrier Project Meeting**  
**April 5, 2001**

NRC, Office of Nuclear Reactor Regulation

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E. Weiss  
E. Connell  
R. Fretz  
D. Frumkin  
P. Qualls

NRC, Region I

J. Linville

PSEG Nuclear LLC

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D. Lounsbury  
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K. Hawks, Transco

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