September 10, 2001

Mr. Harold W. Keiser
Chief Nuclear Officer and President
PSEG Nuclear LLC - X04
P. O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION - NRC INSPECTION REPORT 50-272/01-08, 50-311/01-08

Dear Mr. Keiser:

On August 11, 2001, the NRC completed an inspection at your Salem Units 1 and 2. The enclosed report documents the inspection findings which were discussed on August 15, with Mr. Lon Waldinger and other members of your staff.

The inspectors examined activities conducted under your license as they related to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Specifically this inspection included six weeks of resident inspection with assistance from region-based specialists.

Based on the results of this inspection, the inspectors identified one issue of very low safety significance (Green) involving the failure to promptly identify and correct an adverse condition that affected the operability of the containment spray additive tank. This issue was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because the issue has been entered into your corrective action program, the NRC is treating the issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspectors at the Salem facility.

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Sincerely,

/RA by C. Cowgill for/

Glenn W. Meyer, Chief
Projects Branch 3
Division of Reactor Projects

Docket Nos.: 50-272; 50-311
License Nos.: DPR-70; DPR-75

Enclosure: Inspection Report 50-272/01-08, 50-311/01-08
Attachment 1: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos:	50-272, 50-311
License Nos:	DPR-70, DPR-75
Report No:	50-272/01-08, 50-311/01-08
Licensee:	PSEG Nuclear LLC
Facility:	Salem Nuclear Generating Station, Units 1 and 2
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	July 1 - August 11, 2001
Inspectors:	Raymond K. Lorson, Senior Resident Inspector Fred L. Bower, Resident Inspector Richard Barkley, Senior Project Engineer Leonard Prividy, Senior Reactor Inspector Ram S. Bhatia, Reactor Inspector Todd Fish, Operations Examiner
Approved By:	Glenn W. Meyer, Chief Projects Branch 3 Division of Reactor Projects

Summary of Findings

IR 05000272-01-08, IR 05000311-01-08, on 07/01 - 08/11/2001, Public Service Electric Gas Nuclear LLC, Salem Units 1 and 2. Operability Determinations.

The inspection was conducted by resident inspectors, a regional operations specialist and two regional engineering specialists. This inspection identified one green finding which was treated as a non-cited violation. The significance of findings is indicated by their color (Green, White, Yellow, or Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "no color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

(Green) PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using the significance determination process (SDP) and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. The failure to promptly correct this condition adverse to quality was a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI **(NCV 50-311/01-08-001).**

B. Licensee Identified Findings

One violation of very low significance was identified by the licensee and has been reviewed by the inspectors. Corrective actions, taken or planned by the licensee, appear reasonable. This violation is listed in section 40A7 of this report.

Report Details

SUMMARY OF PLANT STATUS

Units 1 and 2 began the period operating at 100 percent power. On July 8 operators manually reduced power to approximately 80 percent at both Units following the unexpected loss of the number 1 station power transformer (Section R14). The units were returned to full power on July 9. Unit 1 remained at approximately 100 percent power for the remainder of the period. On July 20 operators reduced Unit 2 power to 89 percent to conduct maintenance on an off-site power source. Unit 2 was returned to and operated at approximately 100 percent power for the duration of the period.

1. REACTOR SAFETY
Initiating Events, Mitigating Systems, and Barrier Integrity

R01 Adverse Weather Protection

a. Inspection Scope

The regional electrical power grid operator issued a hot weather alert for August 6 through August 10, 2001, to prepare personnel and facilities for the anticipated hot weather conditions. PSEG Nuclear formed a transient assessment response plan (TARP) team to identify temperature-related vulnerabilities and to recommend actions to ensure safe and reliable power generation. The inspectors attended the TARP meetings, reviewed the TARP report and interviewed operators to verify that the design features and operating procedures protected mitigating systems from the adverse weather conditions. Additionally, the inspectors performed field observations and walkdowns of normally operating mitigating systems including the service water (SW), component cooling water and charging systems to confirm that key system components were functioning properly.

The inspectors also reviewed several notifications that PSEG Nuclear initiated to develop formalized processes and procedures to prepare for future elevated ambient temperature conditions. The notifications involved planned actions to develop and/or revise: the severe weather guide for hot weather operations (20074170); a risk to generation assessment (20074191); a heating and ventilation system abnormal operating procedure (20074192); an abnormal operating procedure for responding to grid operator emergency messages (20074193); a communications strategy to disseminate plant status based on operational or seasonal conditions (20074194); and, a site-wide procedure for summer readiness (20074195).

b. Findings

No findings of significance were identified.

R04 Equipment Alignment

The inspectors performed three partial system walkdowns during planned system maintenance outages to confirm that redundant mitigation systems and components were properly aligned to perform their intended safety function, protected by administrative controls, and in an acceptable material condition. The walkdowns were performed during the following maintenance periods:

- 11 CCW heat exchanger outage on July 16;
- 13 auxiliary feedwater pump (AFW) outage on July 17; and
- 21 safety injection (SI) pump outage on July 27.

b. Findings

No findings of significance were identified.

R05 Fire Protection

a. Inspection Scope

The inspectors toured the following risk-significant plant areas to assess PSEG Nuclear's control of combustible materials and ignition sources, the material condition of fire detection and suppression equipment, and the operational status of fire barriers. They verified on a sampling basis that fire impairments were documented and that adequate compensatory measures were in place.

- Unit 1 - 84' elevation of the primary auxiliary building;
- Unit 2 - 4kV electrical switchgear and safety-related battery rooms
- Unit 1 and Unit 2 - SW pump rooms
- Unit 1 and Unit 2 - emergency diesel generator (EDG) and EDG control rooms (fire areas 1FA-DG-110E, 2FA-DG-100E, 1FA-DG-100E-1, and 2FA-DG-100E-1)

The inspectors also reviewed the following documents:

- SC.FP-AP.ZZ-003(Q), Rev. 7, Actions for Inoperable Fire Protection-Salem Station
- NC.DE-PS.ZZ-0001(Q)-A2-BE, Rev. 2, Fire Area Boundary Evaluations, Vol. I
- DE-PS.ZZ-001(Q)-A2-FHA, Rev. 5, Salem Fire Protection Report Fire Hazards Analysis
- DWG 601610 A 1212-2, Rev.2, Aux. Bldg., React. Cont. & Fuel Handling Bldg Area EL 100 Fire Barriers

b. Findings

No findings of significance were identified.

R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed PSEG's response to three emergent maintenance activities through direct observations, document reviews (i.e. operating logs, maintenance plans and instructions, and on-line risk assessments) and interviews of operations, maintenance and work control personnel. The maintenance activities included the re-packing of the 2SJ12 valve, repair of a leak from a welded joint immediately downstream of the 21SW4 valve, and repair of the No. 1 station power transformer lightning arrestor.

2SJ12 Packing Replacement

The inspectors reviewed PSEG Nuclear's written request for a Notice of Enforcement Discretion (NOED) on July 19, to support the re-packing of the 2SJ12 valve, while the 2SJ4 and 2SJ5 valves remained in the shut position. A regional engineering specialist inspector reviewed the valve engineering action plan that was subsequently developed under order 80030828 that described the planned actions to repack the 2SJ12 valve. The specialist inspector also reviewed order 80031620 that provided the engineering analysis supporting PSEG Nuclear's determination that the high pressure emergency core cooling system high head injection flowpath could remain operable with the 2SJ4 and 2SJ5 valves shut. The inspectors reviewed notification 20073212 that described PSEG Nuclear's submittal of a NOED request with an insufficient understanding of the 2SJ4 and 2SJ5 valve characteristics and notification 20074229 that described a minor violation associated with the failure to comply with Technical Specification (TS) 3.6.3 requirements to de-energize the 2SJ4 and 2SJ5 valves during the 2SJ12 valve re-packing activities which rendered the 2SJ12 containment isolation function inoperable.

21SW4 Tubing Leak Repair

The inspectors reviewed notification 2007005 which initially identified the leak on June 6 and notification 20074160 that noted that PSEG Nuclear failed to identify that the through-wall leak was in the American Society of Mechanical Engineers (ASME) Code Class 3 section of the system and failed to implement TS action 3.4.11.1.c until August 9. This resulted in operation of the SW system in a degraded condition from June 6 to August 9. The inspectors observed that PSEG Nuclear subsequently isolated the degraded section of the SW system in accordance with TS Action 3.4.11.1.c and repaired the leak.

b. Findings

The failure to promptly identify and correct the through-wall leak at 21SW4 that affected the ASME portion of the SW system is a licensee identified non-cited violation of 10 CFR50 Appendix B, Criterion XVI as documented in Section 4OA7.

No additional findings of significance were identified.

R14 Personnel Performance During Nonroutine Plant Evolutions

The inspectors reviewed PSEG Nuclear's response to an event involving the unexpected loss of section 2 of the 500kV bus following the loss of the number 1 station power transformer. This resulted in the loss of three circulating water pumps and entries into TS 3.8.1.1.a at each unit. The operators reduced power at each unit to approximately 80 percent in accordance with the circulating water system operating abnormal procedure (AB.CW-0001).

The inspectors reviewed the applicable operating logs, selected plant data, TS requirements and the abnormal operating procedure to evaluate the operators' response to this event. The inspectors also reviewed the TARP report that was developed for this event to assess the adequacy of PSEG's immediate and planned follow-up corrective actions.

b. Findings

No findings of significance were identified.

R15 Operability Determinations

a. Inspection Scope

On May 7 chemistry technicians sampled the containment spray additive tank (SAT) and discovered that the sodium hydroxide (NAOH) concentration was at 28.4 percent, which was below the 30 percent NAOH concentration required by TS 3.6.2.2.a. PSEG Nuclear entered TS 3.6.2.2 and restored the SAT NAOH concentration above 30 percent within the allowed TS action time and formed a TARP team to determine the root cause for this problem. The TS requirement is designed to ensure sufficient NAOH is available in the SAT to control the pH inside the containment post-accident and to remove iodine from the containment atmosphere following a loss of coolant accident that would result in operation of the containment spray system.

The inspectors interviewed chemistry and licensing personnel and reviewed applicable documentation to determine the risk significance of this event (i.e., determine how long the tank was below the TS required concentration and the ability of the SAT to perform its accident mitigation function in the "as found" condition) and to ensure that PSEG Nuclear's immediate and planned follow-up actions were appropriate and consistent with TS requirements. The following specific documents were reviewed:

- The TARP report for this event
- LER 311/01-002-00 that was submitted for this event on August 2 (approximately 87 days following the initial discovery of the problem)
- Notification 20065263 that documented the SAT NAOH concentration problem
- Notification 20073405 that documented that PSEG Nuclear did not identify that the condition was reportable per 10 CFR 50.73 until questioned by the NRC

b. Findings

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 SAT level trend that occurred over a several month period. This

resulted in dilution of the Unit 2 SAT NAOH below the TS required minimum value for a period of up to 109 days. This finding was evaluated using the significance determination process (SDP) and found to be of very low significance (Green) since the tank concentration was above the minimum calculated NAOH concentration of 28 percent required for the SAT to perform its accident mitigation function. The failure to promptly correct the condition adverse to quality was a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI.

The Unit 2 SAT level had increased by approximately 300 gallons between November 2000 and May 2001 as determined by review of the control room operating logs. The source of the SAT in-leakage was subsequently considered to be leakage past one of two tank inlet valves. The in-leakage diluted the SAT NAOH concentration, however, PSEG Nuclear did not apparently recognize this trend and therefore did not implement any effective corrective actions to preclude the tank from dropping below the TS required value.

PSEG concluded that the SAT was capable of performing its accident mitigation function based on a vendor engineering calculation that concluded that the SAT could perform its function down to a NAOH concentration of 28 percent (which was below the “as found” NAOH concentration of 28.4 percent measured on May 7). This event was considered to have a credible impact on safety since PSEG Nuclear did not identify this condition for a lengthy time. The finding was determined to be of very low significance (GREEN) since the “as found” SAT NAOH concentration was above the required analytical limit.

10 CFR 50, Appendix B, Criterion XVI, requires, in part, the conditions adverse to quality be promptly identified and corrected. Contrary to the above, PSEG Nuclear failed to identify and correct an adverse condition that challenged the operability of the SAT from approximately November 2000 to May 2001. This is a violation of 10 CFR 50, Appendix B, Criterion XVI. This very low risk significance violation has been entered into PSEG Nuclear’s corrective action program as Notification 20065263 and is being treated as a non-cited violation consistent with the NRC’s enforcement policy. **(NCV 50-311/01-08-01)**

PSEG Nuclear’s failure to identify that this issue was reportable and submit the LER within 60 days of discovery of the condition as required by 10 CFR 50.73 was considered to be a violation of minor significance and will not be subject to formal enforcement action. The inspectors verified that this event was entered into the corrective action program by the initiation of Notification 20073405.

R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors observed and/or reviewed documentation of three post-maintenance testing (PMT) activities to confirm that the test scope was appropriate for the completed maintenance activities, and also to confirm that the test results were acceptable. The following PMT activities were reviewed:

- 21SW127 testing following replacement of the valve actuator
- 23SW58 testing following emergent maintenance performed on July 16
- 21 safety injection (SI) pump testing following a planned maintenance outage on July 27

b. Findings

No findings of significance were identified.

R22 Surveillance Testing

a. Inspection Scope

The inspectors observed portions of and reviewed the results of the surveillance tests listed below. The inspectors verified that the tests were adequately controlled, that test results were properly documented, and that results met applicable TS acceptance criteria. The inspectors also discussed test results with operations and engineering personnel.

- 1B EDG Surveillance Test (S1.OP-ST.DG-0002(Q))
- 12 Auxiliary Feedwater Pump Inservice Test (S1.OP-ST.AF-0002(Q))
- 22 Auxiliary Feedwater Pump Inservice Test (S2.OP-ST.AF-0002(Q))
- 2C Diesel Generator Surveillance Test (S2.OP-ST.DG-0003(Q))

b. Findings

No findings of significance were identified.

R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed installed temporary modifications to assess: (1) the adequacy of the 10 CFR 50.59 evaluation; (2) that the installations were consistent with the modification documentation; (3) that drawings and procedures were updated as applicable; and, (4) the adequacy of post-installation testing. The following temporary modifications were reviewed:

- 00-043 Temporary Submersible Pump to Provide Additional Flow at SW Trough to Prevent Grass Buildup

- 01-018 Temporary Fresh Water Source for Vendor Demineralizing Equipment (a large fire protection system tap off)

- 00-004 Leading Edge Flow Monitor (LEFM) Cabinets Temporary Cooling Unit Installation

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed in the training simulator and in the technical support center (TSC) an emergency preparedness drill conducted on August 8, 2001. The inspectors reviewed several key aspects of the drill, including the event classification, notification, facility activation, accountability, and operator and emergency staff response to determine whether NRC and PSEG Nuclear emergency procedural requirements were met. Additionally the inspectors reviewed the results of PSEG Nuclear's critique of the drill to determine whether drill problems were properly identified for correction.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

OA3 Event Follow-up

(Closed) LER 50-311/01-002-00: Containment Spray Additive Tank Exceeded Technical Specification Limit Allowable Outage Time. This LER described an event involving the dilution of the SAT below the TS required NAOH concentration. The LER is described in further detail in Section R15 of this report and is closed.

OA6 Management Meetings

.1 Exit Meeting Summary

On August 15, 2001, the inspectors presented their overall findings to members of PSEG Nuclear management led by Mr. Lon Waldinger of Salem Operations. PSEG Nuclear management acknowledged the findings presented. Additionally, they stated that none of the information reviewed by the inspectors was considered proprietary.

.2 PSEG Nuclear/NRC Management Meeting

The NRC conducted the annual end of cycle review meeting with PSEG Nuclear on July 9, 2001. During the meeting, the NRC discussed the status of the performance indicators, inspection findings, and performance trends for the past year. PSEG Nuclear provided a brief synopsis of ongoing initiatives to address areas of concern. The meeting was conducted in the PSEG Nuclear Access Center and was open for public observation. A copy of the slide presentation can be found in ADAMS under ML012350153.

OA7 Licensee Identified Violations: The following violation of very low significance was identified by PSEG Nuclear and was a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as Non-Cited Violation (NCV):

NCV 50-311/01-08-02: 10 CFR 50, Appendix B, Criterion XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20 PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve but did not evaluate the whether the leak was inside the ASME section of the SW system until approximately August 9. This is being treated as a non-cited violation.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

a. Key Points of Contact

K. Davison, Operations Manager
D. Garchow, Vice-President, Operations
G. Salamon, Licensing Manager
L. Waldinger, Operations Director

b. List of Items Opened, Closed, and Discussed

Opened/Closed

50-311/01-08-01	NCV	Failure to promptly identify and correct an adverse condition that affected the operability of the containment spray additive tank. (Section R15)
50-311/01-08-02	NCV	Failure to evaluate the whether a pipe leak identified downstream of the 21SW4 valve was inside the ASME section of the SW system until approximately August 9, 2001. (Section OA7)

Closed

50-311/01-002-00	LER	Containment Spray Additive Tank Exceeded Technical Specification Limit Allowable Outage Time. (Section OA3)

c. List of Acronyms

ASME	American Society of Mechanical Engineers
EDGs	Emergency Diesel Generators
NAOH	Sodium Hydroxide
NCV	Non-Cited Violation
NOED	Notice of Enforcement Discretion
NRC	Nuclear Regulatory Commission
PMT	Post-maintenance Testing
PSEG	Public Service Electric & Gas
SAT	Spray Additive Tank
SDP	Significance Determination Process
SI	Safety Injection
SW	Service Water
TARP	Transient Assessment Response Plan
TS	Technical Specification
TSC	Technical Support Center