November 13, 2002

Mr. Harold W. Keiser
Chief Nuclear Officer and President
PSEG Nuclear LLC - N09
P. O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION - NRC INSPECTION REPORT 50-272/02-07, 50-311/02-07

Dear Mr. Keiser:

On September 30, 2002, the NRC completed an inspection of your Salem 1 & 2 reactor facilities. The enclosed report documents the inspection findings which were discussed on October 11, 2002, with Mr. Carlin, Mr. Garchow, Mr. O'Connor and other members of your staff.

The inspection examined activities conducted under your license as they relate 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 involved one calendar quarter of resident inspection and region-based inspections of heat sink performance, occupational radiation safety and public radiation safety performance indicator verification, and fire protection.

Based on the results of this inspection, the inspectors identified three issues of very low safety significance (Green) and an additional issue for which the significance remained to be determined. The Green issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these Non-Cited Violations, 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, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, and the NRC Resident Inspector at the PSEG Nuclear facility.

The NRC has increased security requirements at Salem Nuclear Generating Station in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The NRC continues to inspect PSEG Nuclear's overall security controls and its compliance with the Order and current security regulations.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Enclosure: Inspection Report 50-272/02-07, 50-311/02-07
Attachment: Supplemental Information

Docket No. 50-272; 50-311
License No. DPR-70; DPR-75

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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:	50-272/2002-07, 50-311/2002-07
Licensee:	PSEG Nuclear LLC
Facility:	Salem Nuclear Generating Station, Units 1 & 2
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	June 30 - September 30, 2002
Inspectors:	Raymond K. Lorson, Senior Resident Inspector Fred L. Bower, Resident Inspector Joseph Schoppy, Senior Resident Inspector, Hope Creek Joseph T. Furia, Senior Health Physicist Leonard J. Prividy, Senior Reactor Inspector Roy Fuhrmeister, Senior Reactor Inspector Naeem Iqbal, Fire Protection Engineer, NRR Stephen M. Pindale, Reactor Inspector Thomas Hipschman, Reactor Inspector
Approved By:	Glenn W. Meyer, Chief Projects Branch 3 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000272-02-07, IR 05000311-02-07, Public Service Electric Gas Nuclear LLC, Salem Units 1 and 2, on 6/30 - 9/30/02, Fire Protection, Emergent Work, Operability Determinations and Surveillance Testing.

The inspection was performed by resident inspectors, regional engineering and radiation protection specialists, and fire protection specialists from Region I and NRR. This inspection identified three green issues which were non-cited violations and one issue for which the significance has not been determined. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- **TBD.** The inspectors identified an apparent violation of License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). PSEG Nuclear failed to properly maintain the carbon dioxide automatic fire suppression system as required by the fire protection program. Specifically, tracer gas testing identified that leakage from six safety-related electrical rooms (three at Unit 1 and three at Unit 2) was sufficient to prevent the carbon dioxide (CO_2) system from reaching and maintaining the 50 percent CO_2 concentration for a hold time of 20 minutes as required by the National Fire Protection Association (NFPA)-12, "Standard on Carbon Dioxide Extinguishing Systems." The leakage problems were attributed to a faulty design modification and a failure to perform effective preventive maintenance on the area isolation barriers.

  The determination of the significance of this finding was not completed by the end of the period. Therefore this finding will remain unresolved pending completion of the significance determination process (SDP). **(URI 50-272 and 311/02-07-01)**

- **Green.** PSEG Nuclear failed to implement effective corrective actions subsequent to January 2001 surveillance testing that indicated that the Unit 1 auxiliary building ventilation (ABV) system charcoal adsorber bank was degraded. The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement.

  This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action

program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy (Section R13). **(NCV 50-311/02-07-02)**

- **Green.** PSEG Nuclear failed to properly evaluate and correct a degraded ABV system condition that adversely affected the radiological barrier function of the system. Specifically, the inspectors identified that airflow was out of the residual heat removal room and into the auxiliary building stairwell. This provided a pathway for radioactive effluents to bypass the auxiliary building ventilation charcoal filters.

  The inspectors reviewed the SDP Phase 1 screening worksheet and noted that findings that adversely affect the radiological barrier function of the auxiliary building are of very low risk significance. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20116935 and is being treated as a non-cited violation consistent with the NRC's enforcement policy (Section R15). **(NCV 50-311/02-07-03)**

- **Green.** PSEG Nuclear failed to identify the adverse consequences associated with a Unit 1 containment spray additive tank (SAT) increasing level trend that occurred over a several month period. This resulted in dilution of the Unit 1 SAT sodium hydroxide (NaOH) below the TS required minimum concentration value. The inspectors determined that the failure to take adequate corrective actions to preclude repetition of a significant condition adverse to quality constituted a violation of 10 CFR 50 Appendix B, Criterion XVI. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT.

  The risk significance of this finding was very low because the tank concentration was below the TS limit, but was above the minimum calculated NaOH concentration of 28 percent required for the SAT to perform its accident mitigation function. This very low risk violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy (Section R22.1). **(NCV 50-272/02-07-04)**

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Report Details

SUMMARY OF PLANT STATUS

Unit 1 operated at essentially full power for the duration of the period.

Unit 2 began the period at full power. Operators reduced power to approximately 96 percent on August 25 in response to a moisture separator re-heater drain tank level control problem. The problem was corrected and the operators returned the plant to full power later that day. Operators reduced power to about 47 percent power to perform turbine valve testing on September 21. The return to full power was delayed to repair a steam leak from the 22MS42 steam supply valve to the 22 main feedwater pump. The plant was returned to full power on September 23, and operated there for the duration of the period.

1. REACTOR SAFETY

Initiating Events, Mitigating Systems, and Barrier Integrity [Reactor - R]

1R04 Equipment Alignment

.1 Partial System Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns of mitigating systems during equipment maintenance outages to confirm that the redundant systems were available to perform their intended safety functions, in acceptable material condition and protected by administrative controls. The following walkdowns were performed:

- The 1A and 1C emergency diesel generators (EDGs), 11 and 13 component cooling water (CCW) pumps, 11 and 12 component cooling water room coolers, during emergent maintenance and post-maintenance testing on the 12 component cooling water pump on July 3, 2002.

- The 1A and 1B EDGs, 11 and 12 CCW pumps, 11 safety injection pump, 11 charging pump, 11 containment spray pump, the fuel oil storage tanks and transfer pumps, the 1A and 1B 4160V switchgear rooms, and the station blackout diesel during an emergent 1C EDG outage on July 8.

- The 1A and 1C EDGs and their support equipment including the associated service water cooling pumps during an emergent 1B EDG maintenance outage on September 3.

b. Findings

No findings of significance were identified.

.2 28V/125V DC Electric Distribution Complete System Walkdown

a. Inspection Scope

The inspectors performed a complete system walkdown of the Unit 1 and Unit 2 28 volt and 125 volt DC electric distribution system batteries and battery charger components in the auxiliary building to confirm that key system components were properly aligned, consistent with plant drawings, and in good material condition. The inspectors also reviewed the system health reports, maintenance rule performance data, corrective action reports and interviewed the performance engineer to identify any outstanding issues that would challenge the operability of the system.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Routine Fire Area Walkdowns

a. Inspection Scope

The inspectors toured six areas important to reactor safety to evaluate conditions related to: (1) control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment and features; and, (3) the fire barriers used to prevent fire damage or fire propagation. For selected areas the inspectors referred to administrative procedure NC.NA-AP.ZZ-0025(Q), “Operational Fire Protection Program,” to identify: (1) 10 CFR 50, Appendix R, safe shutdown equipment; (2) construction and fire barrier information; (3) fire detection equipment; (4) fire suppression equipment; and, (5) diagrams of the fire area. The following areas were reviewed:

- Unit 1 Switchgear Room (1C 125 VDC Battery Room) - Elevation 64' (Zone 81)
- Unit 1 Switchgear Room - Elevation 84' (Zone 82)
- Unit 1 Relay Room - Elevation 100' (Zone 91)
- Unit 1 Auxiliary Feedwater Pumps Area - Elevation 84' (Zone 92)
- Unit 1 Emergency Diesel Generator Fuel Oil Storage Tank Area - Elevation 84'
- Unit 2 Emergency Diesel Generator Fuel Oil Storage Tank Area - Elevation 84'

b. Findings

No findings of significance were identified.

.2 Failure to Maintain Elements of the Salem Fire Protection Program

a. Inspection Scope

The inspectors reviewed Special Report 50-311/02-003 which described a violation of the Fire Protection Program (License Condition 2.C.10) resulting from tracer gas tests

which identified that leakage from the Unit 1 and Unit 2 4160 volt switchgear rooms, 460 volt switchgear rooms and 78' elevation electrical penetration areas was sufficient to prevent the carbon dioxide (CO_2) system from reaching and maintaining a 50 percent concentration for a hold time of 20 minutes as required by the National Fire Protection Association (NFPA)-12, "Standard on Carbon Dioxide Extinguishing Systems." The inspectors discussed this event with PSEG Nuclear's fire protection personnel and reviewed the associated root cause analysis (RCA) (notification 2010053 and order 70025026).

b. Findings

Introduction

The inspectors identified a finding, for which the significance remains to be determined, involving an apparent violation of License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). In six safety-related fire areas, PSEG Nuclear failed to properly maintain the automatic CO_2 suppression systems to be able to reach and maintain for twenty minutes a carbon dioxide concentration of 50 percent as required by the National Fire Protection Association (NFPA)-12, "Standard on Carbon Dioxide Extinguishing Systems."

Description

Previous problems associated with the CO_2 fire suppression system were identified in NRC Inspection Reports 50-272 & 311/99-10 and 50-272 & 311/01-02. In May 2002, tracer gas testing was performed in the Unit 1 & 2 lower electrical penetration areas (78' elevation) and the Unit 1 4160 volt switchgear room to measure the tracer gas dilution rate and also to determine the capabilities of the CO_2 suppression system. These tests were performed to support a re-analysis of the CO_2 fire suppression system and also to resolve issues associated with commitments for CO_2 retention in fire areas at Salem. The inspectors reviewed the test results and noted that the predicted initial CO_2 concentration for each of these areas was approximately 45 percent and also that the CO_2 concentration would have dissipated to between 18 and 28 percent within 20 minutes.

PSEG Nuclear performed an extent of condition review and determined that the Unit 2 4160 Volt Switchgear Room (64' elevation) and the Unit 1 & 2 460 volt switchgear rooms (84' elevation) were also affected by this problem of not being able to achieve and maintain the required CO_2 concentration. PSEG Nuclear established continuous firewatches in these six areas as a compensatory measure in accordance with the Fire Protection Program and issued Special Report 50-311/02-003.

PSEG Nuclear identified that the majority of leakage from the rooms was through the CO_2 isolation dampers and the fire door seals. Based on information supplied by the ventilation damper vendor, PSEG Nuclear determined that the cause of this event was that the CO_2 isolation dampers were backdraft dampers and therefore improperly utilized in the switchgear and penetration area ventilation (SPAV) system where the switchgear area exhaust ventilation fans would continue to operate following a CO_2 system actuation. This system design problem was introduced in the 1994 to 1996 timeframe during installation of engineering changes (EC) 1-EC-3337 and 2-EC-3298.

The inspectors determined that the failure to properly evaluate the impact of engineering changes on the operation of the CO_2 suppression system was a contributing factor to this event.

The inspectors reviewed notification 20109532 which stated that the vendor assigned an approximate five year lifetime for the CO_2 isolation damper seals. PSEG Nuclear was unable to demonstrate that the CO_2 damper seals had ever been replaced. The inspectors concluded that PSEG Nuclear's failure to properly maintain the room isolation barriers was also a contributing factor to this event.

Analysis

The significance determination for this finding remained unresolved at the completion of the period.

Enforcement

License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2) require that PSEG Nuclear maintain an approved Fire Protection Program. Contrary to the above, PSEG Nuclear failed to properly maintain room isolation barriers and improperly implemented a modification to the switchgear penetration area ventilation system that resulted in a failure of the automatic suppression systems to meet the carbon dioxide concentration requirements in six safety-related fire protection areas (three areas at each unit). This was considered an apparent violation of License Conditions 2.C.5 and 2.C.10; however this finding will remain unresolved pending completion of the significance determination process **(URI 50-272; 50-311/02-07-01).**

1R07 Heat Sink Performance

.1 Biennial Heat Sink Performance Review

a. Inspection Scope

The inspectors performed a biennial review of performance monitoring activities for the 1A and 2B emergency diesel generator jacket water and lube oil coolers to verify that any potential heat exchangers (HX) deficiencies that could mask degraded performance were identified. This included a review of the test methods for consistency with accepted industry practice and the adequacy of the calculations performed to support the test acceptance criteria. Procedure SC.MD-GP.SW-0001(Q), Service Water (SW) Silt Survey, and recent test results for the 11 and 23 SW bays obtained from this procedure were reviewed for adequacy. The inspector also verified that SW bay desilting operations were performed as required by the procedure. In addition, the inspector conducted a SW system walkdown with cognizant engineering personnel to assess the material condition. To ensure PSEG Nuclear was appropriately identifying and resolving potential problems, the inspector reviewed various problems that were included in the recent SW system performance reports and described in more detail in notifications and work orders. A list of documents reviewed is appended to the end of this report.

The inspector reviewed several actions taken to address substantial seat leakage problems associated with the 24 and 30-inch butterfly valves which cross connect the SW headers. The operability evaluation of an approximate 300-GPM seat leakage problem associated with the SW header cross connect valves, SW-17, was reviewed to determine if it appropriately evaluated other system leakages and if these overall leakages had been considered in system hydraulic calculations. Also, the inspector reviewed work coordination activities and efforts to determine the adequacy of the root cause evaluation concerning two instances where the auxiliary building SW header cross connect valve, 12SW23, failed to close on demand from the control room.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On August 2, the inspectors observed two licensed operator simulator re-qualification examination scenarios to assess operator performance and the examination critiques. The inspectors reviewed emergency and abnormal procedure usage, command and control, crew communications, and confirmed that critical task steps were performed. The inspectors also reviewed the appropriateness and timeliness of the emergency event classifications during each drill scenario. The first scenario involved a reactor coolant pump seal failure followed by a small break loss of coolant accident. The second scenario involved a main feedwater line break inside the primary containment. The inspectors reviewed the results of each exercise with the PSEG Nuclear examination evaluators to determine whether the exam performance problems had been properly identified and also to evaluate the adequacy of the planned and completed corrective actions.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

.1 Service Water and Circulating Water System Reviews

a. Inspection Scope

The inspectors reviewed recent operating problems, notifications, system health reports, maintenance rule (MR) performance criteria and (a)(1) goals, and MR expert panel meeting minutes from June 2002 to determine whether PSEG Nuclear had effectively monitored the performance of the SW and circulating water (CW) systems. PSEG Nuclear categorized the SW systems as (a)(1) at each unit due to previous SW system preventable functional failures while the Unit 1 CW system had been placed into (a)(1) status due to system problems that resulted in a plant shutdown in March 2002. The inspectors noted that the SW pump train unavailability had exceeded the performance monitoring criteria for several SW pump trains.

The inspectors interviewed the pump and rotating equipment supervisor and observed SW pump maintenance activities throughout the period to assess the corrective actions to address short term SW pump performance problems involving improperly machined lantern rings and in-service test failures. The inspectors reviewed the Salem Service Water and Circulating Water Systems Reliability Improvement Project Plan and interviewed the project manager to determine the status of efforts to improve the long term reliability of these systems. The inspectors noted that the long term corrective actions were in development and concluded that it was premature to assess the adequacy of these actions.

b. Findings

No findings of significance were identified.

.2 Electronic Equipment Refurbishment

a. Inspection Scope

The inspectors reviewed the electronic equipment refurbishment program to assess PSEG Nuclear's on-going activities to improve the reliability of these components. Electronic card problems contributed to Salem Unit 1 exceeding the White performance indicator threshold for unplanned trips in 2000 as discussed in NRC Inspection Report 2001-005. The inspectors toured the refurbishment facility, interviewed the program manager, examined test equipment, and observed part of a safety system protection system (SSPS) card refurbishment.

The project manager and the electrical & controls reliability engineering supervisor indicated that current plans included evaluation of a large number of systems, at both Salem and Hope Creek, for circuit board refurbishment. At Salem the focus has been on three systems (SSPS, electro-hydraulic control, and rod control) where a single component failure on a circuit board can result in a reactor trip. PSEG Nuclear personnel also discussed plans for upgrade of the Hagan modules at Hope Creek.

The refurbishment process involved several steps including: identifying the applicable circuit boards; reviewing each board or card to identify the components on the card that would be most likely to fail; replacing these components and finally testing of the boards prior to use. PSEG Nuclear projected that the refurbishment program will extend the life of the refurbished systems for approximately ten to fifteen years. To date, Salem efforts have focused on the SSPS system due to the high potential for a circuit board failure to cause a plant trip.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed selected maintenance activities through direct observation, document review (risk assessment reviews, operating logs, industry operating experience and notifications), and personnel interviews. This review was performed to determine whether PSEG Nuclear properly assessed and managed the risk, and performed these activities in accordance with applicable technical specification (TS) and work control requirements including administrative procedure SH.OP-AP.ZZ-0027(Q), "On-Line Risk Assessment". The following activities were reviewed:

- Modification of the 12 CCW pump casing drain to relocate a discharge pressure instrument tap in accordance with order 60018789. The maintenance period was extended as a result of a needed revision to the design change package (order 80027986) that modified the drain line. The inspectors verified that the risk associated with extending the maintenance period remained in the same risk categorization band.

- The response to a Salem Unit 1 auxiliary building charcoal absorber bank sample test result received on August 29 that indicated a methyl iodide penetration of greater than the 15% allowed by TS surveillance requirement 4.7.7.1.b.4. The operators subsequently declared the charcoal bank inoperable and placed the Unit into the associated 24 hour shutdown action statement (notification 20111308).

- The response to a torn inlet expansion joint to the 22 auxiliary building exhaust ventilation fan that was identified on July 31 (notification 20108051). The inspectors also reviewed order 70026303 which identified the apparent causes and planned corrective actions related to the delay between the identification of the problem on July 31 and completion of the operability screening on August 2.

- Multiple emergent EDG outages conducted during the period in response to repeated fuel oil leaks from the 1C EDG banjo bolt, a 1C EDG turbo-charger failure on September 13, and a leak from a fuel oil header fitting on the 1B EDG. This review focused on the actions taken to manage and mitigate the plant risk while the EDG repair activities were on-going. The adequacy of the EDG repair activities and

corrective actions will be reviewed separately by the NRC Special Inspection Team formed to investigate these recurring EDG problems.

- A planned 22 auxiliary feedwater pump maintenance outage performed between September 26-28.

b. Findings

Introduction

PSEG Nuclear failed to implement appropriate corrective actions following a January 2001 surveillance test to ensure that the Unit 1 auxiliary building charcoal bank would remain capable of meeting its TS required surveillance test limits during the next scheduled eighteen month surveillance test. This issue was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green) since the performance deficiency affected the radiological barrier function of the auxiliary building.

Description

Testing conducted in January 2001 per TS surveillance requirement (SR) 4.7.7.1.b.4 indicated a methyl iodide penetration of 13.4% in adsorbent charcoal removed from the Unit 1 auxiliary building ventilation system charcoal bank. The TS SR limit for this charcoal performance parameter is 15.0%. PSEG Nuclear identified the potential for the charcoal bank to fail to meet the TS SR 4.7.7.1.b.4 limits prior to the next scheduled eighteen month test but did not implement corrective actions to prevent the subsequent test failure. Testing conducted in August 2002 indicated a methyl iodide penetration of greater than 21% which exceeded the TS 4.7.7.1.b.4 limit and placed the Unit into a twenty-four hour shutdown action statement.

Analysis

This finding was considered to be of more than minor significance since the “as found” charcoal bank condition (i.e. approximately 21% methyl iodide penetration) did not meet the TS requirements for this parameter (15%). However, the results were below the value assumed in the design analysis (30%). Therefore the charcoal bank was degraded but would have been capable of performing its intended safety function. The Phase 1 SDP worksheet indicated that performance issues that involve a degradation of the auxiliary building radiological barrier function are of very low risk (Green).

Enforcement

Appendix B, Criterion XVI, to 10 CFR 50, "Corrective Actions," requires that prompt and effective corrective actions be implemented for conditions adverse to quality. Contrary to the above, PSEG Nuclear failed to implement prompt and effective corrective actions to preclude the charcoal from exceeding the TS SR for methyl iodide penetration subsequent to a January 2001 surveillance test. 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 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy. **(NCV 50-311/02-07-02)**

1R15 Operability Evaluations

.1 Centrifugal Charging Pumps

a. Inspection Scope

The inspectors reviewed the operability determination for the degraded auxiliary oil pumps associated with the No. 12 and No. 22 centrifugal charging pumps (order 70025205). The inspectors also reviewed numerous other PSEG Nuclear-identified safety-related equipment deficiencies during this report period and assessed the adequacy of the operability screenings.

To assess PSEG Nuclear's operability determinations, the inspectors reviewed the following documents:

- SH.OP-AP.ZZ-0108, "Operability Assessment and Equipment Control Program"
- NRC Generic Letter No. 91-18, Revision 1, "Information To Licensees Regarding NRC Inspection Of Degraded And Nonconforming Conditions"
- NC.WM-AP.ZZ-0000, "Notification Process"

b. Findings

No findings of significance were identified.

.2 12 Service Water Header

a. Inspection Scope

Notification 20103898 documented a recent repair to the No. 12 SW nuclear header where an underground portion of leaking piping was sealed via a design change (DCP 80038017). Although the leak was repaired, PSEG Nuclear concluded that the condition of the No. 12 SW nuclear header was operable but degraded. Engineering completed an operability determination (OD 02-006), which was documented in order 70025622. The inspectors reviewed the OD, which evaluated the structural integrity of the affected piping in accordance with Appendix F of NRC Generic Letter 91-18. PSEG

Nuclear planned to complete an inspection of the affected underground piping section during the upcoming refueling outage, and to develop corrective actions as appropriate. The OD stated that the condition must be restored no later than the next refueling outage; however, PSEG Nuclear was evaluating whether permanent repairs to resolve the degraded condition can be deferred beyond the upcoming refueling outage.

b. Findings

No findings of significance were identified.

.3 Unit 2 Auxiliary Building Ventilation System

a. Inspection Scope

The inspectors reviewed OD 02-007 for the torn inlet expansion joint to the 22 auxiliary building ventilation system (ABV) exhaust fan (discussed in Section R13) to determine whether PSEG Nuclear properly evaluated this condition. The inspectors performed a walkdown of applicable portions of the ABV system, interviewed operations and engineering personnel, and reviewed applicable documents including OD 02-07, the meeting minutes from Station Operations Review Committee (SORC) meeting 2002-045 and applicable notifications.

b. Findings

Introduction

PSEG Nuclear failed to properly evaluate and correct a degraded ABV system condition that adversely affected the radiological barrier function of the system. This finding was evaluated using the SDP and determined to be of very low risk (Green) and was considered a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, “Corrective Actions.”

Description

The inspectors performed a walkdown of the Unit 2 auxiliary building on August 2 to assess the impact of a tear in the inlet expansion joint to the 22 ABV exhaust fan on the radiological removal function of the system. The inspectors noted that the airflow into the stairwell adjacent to the 55' elevation of the residual heat removal (RHR) mezzanine (RHR room) was contrary to the system description discussed in Section 9.4.2.3 of the Updated Final Safety Analysis Report (UFSAR). Specifically, airflow was out of the RHR room and into the stairwell (i.e. from an area of potentially higher contamination to an area of lower contamination). Section 9.4.2.2.2 of the UFSAR stated that the ABV system was designed to transfer air from potentially radioactive safeguards areas during a loss of coolant accident to a charcoal bank to remove gaseous radioactive effluents before release.

The inspectors informed the operations superintendent (OS) and the ABV system reliability engineer regarding the improper airflow observation and questioned the impact of this condition on the operability of the ABV system. To address this concern PSEG

Nuclear performed smoke testing and documented in OD 02-07 that the airflow could migrate up to the 100' elevation of the auxiliary building but not up to the 122' elevation where the torn inlet expansion joint was located. The OD did not address the potential for the improper airflow to transfer RHR room effluents to other areas in the auxiliary building that could bypass the charcoal banks. PSEG Nuclear subsequently concluded that the improper airflow did not affect the operability of the ABV system. The SORC reviewed OD 02-07 on August 3 and did not specify any additional actions to investigate or correct the ABV airflow problem.

The inspectors conducted additional interviews of licensing and engineering personnel regarding the improper airflow condition. On August 9 PSEG Nuclear initiated notification 20109148 indicating that the improper airflow condition was most likely caused by improper flow balancing of the ABV system; on August 13, PSEG Nuclear conducted a walkdown of the ABV system and identified that damper 2ABF806 was improperly positioned to the closed position (notification 20109335). The damper was re-positioned to the open position and the improper airflow condition was corrected (i.e. airflow was from the stairwell and into the RHR room as described in the UFSAR). Damper 2ABF806 is a fire damper and is an isolation barrier for the RHR room return ventilation flow. Therefore the RHR room return ventilation flow would have included leakage past the shut 2ABF806 damper and also the improper flow into the auxiliary building stairwell where it could bypass the ABV charcoal bank. PSEG Nuclear initiated notification 20109335 to investigate the shut damper condition and notification 20116935 to review the failure to properly investigate the improper airflow condition.

Analysis

The inspectors evaluated the significance of PSEG Nuclear's failure to properly investigate the improper airflow condition. The problem was considered to be more than minor since the condition could have allowed some RHR room gaseous effluents to bypass the ABV charcoal bank thus increasing the release of radioactive materials following a design basis accident. The inspectors reviewed the SDP Phase 1 screening worksheet and noted that findings that adversely affect the radiological barrier function of the auxiliary building are considered to be of very low risk significance (Green).

Enforcement

Criterion XVI of Appendix B to 10 CFR 50 requires that conditions adverse to quality be promptly identified and corrected. Contrary to the above, PSEG Nuclear failed to promptly identify and correct the cause for an improper airflow condition that degraded the radioactive removal capability of the ABV system. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20116935 and is being treated as a non-cited violation consistent with the NRC's enforcement policy. **(NCV 50-311/02-07-03)**

1R17 Permanent Plant Modifications

.1 12 Component Cooling Water Pump

a. Inspection Scope

The inspectors reviewed selected portions of a design change (order 80027986) that modified the 12 CCW pump casing drain line to relocate a pressure instrument. The inspectors' review was conducted to verify that the design bases, licensing bases, and performance capability of risk significant systems and components were not degraded by the design change. The review also verified the plant risk was properly managed during the installation activities. This design change was selected for review since the initial attempt to install the modification resulted in a leak of approximately 170 drops per minute at the threaded casing to drain line joint. The inspectors verified that difficulties related to the installation of this modification were reviewed and documented in a TARP report (notification 20104925). The design change was temporarily modified to return the 12 CCW pump to service within the TS allowed outage time. The inspectors' review identified discrepancies in work package (order 60018789) and the field copy of the design change package. The inspectors verified that these issues were placed in the corrective action system (notification 20106179) to ensure that the discrepancies were corrected so that the final documentation reflected the actual work performed.

b. Findings

No findings of significance were identified.

.2 Unit 2 - Residual Heat Removal (RHR) System High Point Vent Installation

a. Inspection Scope

The inspectors reviewed selected portions of a design change (order 80033503) that installed vents and vent valves in the Unit 2 RHR cross-connection piping to the safety injection (SI) and charging (CVCS) pumps. The inspectors' review was conducted to verify that the design bases and licensing bases of risk significant systems and components were not degraded by the design change. The modification was developed in response to an industry initiative to ensure that all possible gas intrusion pathways in the high pressure injection, CVCS, and reactor coolant makeup systems were vented. The response to the industry initiative was documented in notification 20051125 and order 7001374. This design change was selected for review in response to several water hammer events that occurred after installation of the modification. These events were documented in Section R22 of NRC Inspection Report 50-272 & 50-311/02-06 and Section R22.2 of this report. Based on ongoing troubleshooting activities, PSEG Nuclear believed that the water hammer was caused by gas pockets in the portion of the RHR system that would supply the reactor coolant system hot leg recirculation. This section of the RHR system was outside the scope of the modification reviewed by the inspectors. The problem identification and resolution (PI&R) aspects of water hammer issue are documented in Section OA2.2 of this report.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors observed the performance of post maintenance testing (PMT) and/or reviewed documentation for selected risk-significant systems to assess whether the systems would satisfy TSs, UFSAR and PSEG Nuclear procedural requirements. The inspectors assessed whether the testing appropriately demonstrated that the systems were operationally ready and capable of performing their intended safety functions. The following test activities were reviewed:

- Retest of the 12 CCW pump casing drain in accordance with order 60018789. The PMT was a visual inspection to verify no leakage at the threaded joint between the casing and the drain line following rework of the design change (orders 60018789 and 80027986) that modified the drain line to relocate a pressure instrument. The rework was required to correct a leak at the threaded casing joint of approximately 170 drops per minute. The inspectors verified that errors in the documentation of the testing performed for order 60018789 were documented and corrected in notification 20065254. The inspectors also reviewed a subsequent performance test of the 12 component cooling water pump that was performed in accordance with S1.OP-ST.CC-0002(Q), "Inservice Testing - 12 Component Cooling Pump".

- Retest of the 1B EDG following repair of the fuel oil supply line fitting on September 3.

- Retest of the 2A EDG following a planned maintenance outage on September 19.

- Retest of the 1C EDG following replacement of the turbo-charger on September 13. The adequacy of the EDG repair activities and corrective actions will be reviewed separately by the NRC Special Inspection Team formed to investigate these recurring EDG problems.

- Retest of the 22 auxiliary feedwater pump on September 28 following a planned maintenance outage that included replacement of the pump packing with a new style of packing. The inspectors also reviewed notification 20115009 that described test control deficiencies associated with this activity.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

.1 Unit 1 - Containment Spray Additive Tank

a. Inspection Scope

On June 3, 2002, chemistry technicians sampled the Unit 1 containment spray additive tank (SAT) and discovered that the sodium hydroxide (NaOH) concentration was at 29.57 percent by weight, which was below the 30 percent limit specified by TS 3.6.2.2. PSEG Nuclear restored the SAT NaOH concentration above 30 percent limit within the allowed TS action time. The TS requirement is designed to ensure sufficient NaOH is available in the SAT to control the pH inside the containment and to remove iodine from the containment atmosphere following a loss of coolant accident that would result in operation of the containment spray system.

Previously, in the May to June 2001 timeframe, a similar situation had been discovered at Salem Unit 2. The inspectors dispositioned this event as a non-cited violation (NCV 50-311/01-08-01) in NRC Inspection Report 2001-08.

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 actions were appropriate and consistent with TS requirements. The following specific documents were reviewed:

- LER 272/02-002-00 dated August 2, 2002.
- Notification 20101777 that documented the SAT NaOH concentration issue
- Notification 20101881 & order 70025238 that documented the apparent cause analysis.

b. Findings

Introduction

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 1 SAT level trend that occurred over a several month period. This resulted in dilution of the Unit 1 SAT NaOH below the TS required minimum concentration value. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. The inspectors evaluated this finding with the SDP and determined that it was low risk (Green) and the inspectors determined that the failure to take adequate corrective actions to preclude repetition of a significant condition adverse to quality constituted a violation of 10 CFR 50, Appendix B, Criterion XVI.

Description

The inspectors reviewed Order 70025238 and noted that the Unit 1 SAT level had increased by approximately 60 gallons between November 2001 and May 2002. The most likely source of the SAT in-leakage was the refueling water storage tank (RWST) past one of two tank inlet valves. The SAT level is monitored weekly; however, PSEG Nuclear did not recognize the trend of increasing level and resultant SAT dilution. Therefore, PSEG Nuclear did not implement effective corrective actions to preclude the tank from dropping below the TS 3.6.2.2.a specified percent by weight NaOH concentration range between the required six month chemical analysis surveillance intervals.

Analysis

PSEG Nuclear 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 design function down to a NaOH concentration of 28 percent (which is below the as found NaOH concentration of 29.57 percent measured on June 3, 2002). If left uncorrected and the dilution was allowed to continue, this event would have become a more significant safety concern when the NaOH concentration dropped below the 28 percent by weight design limit required for the system to perform its post-accident safety function of keeping radio-iodides in solution. The finding was determined to be more than minor, because PSEG Nuclear's ineffective corrective action resulted in a TS violation, i.e., having the SAT above its TS required limits for NaOH concentration, however, the finding was determined to be of very low significance (Green) since the as found SAT NaOH concentration was above the design basis limit.

Enforcement

The Code of Federal Regulations, Title 10, Part 50, Appendix B, Criterion XVI, "Corrective Actions" requires that significant conditions adverse to quality be promptly identified and corrected to preclude repetition. Contrary to the above, PSEG Nuclear failed to take adequate corrective actions to preclude repetition of a significant condition adverse to quality. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. 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 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy. **(NCV 50-311/02-07-04)**

.2 Inservice Surveillance Tests

a. Inspection Scope

The inspectors observed the performance of surveillance test procedures or reviewed test data of selected risk-significant SSCs to assess whether the SSCs satisfied the Technical Specifications, the UFSAR, and PSEG Nuclear procedure requirements. The inspectors assessed whether the testing appropriately demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. The following tests and activities were reviewed:

- S1.OP-ST.CC-0002(Q), "Inservice Testing - 12 Component Cooling Pump"
- S2.OP-ST.AF-0003(Q), "Inservice Testing - 23 Auxiliary Feedwater Pump"
- S1.OP-ST.DG-0003(Q), "1C Diesel Generator Surveillance Test"
- S2.OP-ST.RHR-0002(Q), "Inservice Testing - 22 Residual Heat Removal Pump"
- SC.MD-ST.28D-0003(Q), "Quarterly Inspection and Preventive Maintenance of 28V Vital Batteries"

The 1C EDG surveillance test was aborted after approximately 20 minutes due to a fuel oil leak (notification 20105160). The adequacy of the EDG repair activities and corrective actions will be reviewed separately by the NRC Special Inspection Team formed to investigate these recurring EDG problems.

Observations regarding water hammer experienced during S2.OP-ST.RHR-0002(Q) were documented in notification 20104986 for disposition by the corrective action process. Additional problem identification and resolution documents reviewed included notifications 20099566, 20099608, 20101499 and 20102647 and orders 70024930, 80045582 and 80046794.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP6 Drill Evaluation

a. Inspection Scope

On August 2, the inspector observed two licensed operator simulator re-qualification examination scenarios to assess operator performance and the evaluators' critiques. Additionally the inspector reviewed the whether the emergency event classifications were appropriate and timely. Details are discussed in Section R11.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Occupation Radiation Safety [OS]

2OS1 Access Control

a. Inspection Scope

During the period July 16-19, 2002, the inspector reviewed exposure significant work areas, high radiation areas, and airborne radioactivity areas in the plant and evaluated associated controls and surveys of these areas to determine if the controls (i.e., surveys, postings, barricades) were acceptable. For these areas, the inspector reviewed radiological job requirements and attended job briefings to determine if radiological conditions in the work area were adequately communicated to workers through briefings and postings. The inspector also verified radiological controls, radiological job coverage, and contamination controls to ensure the accuracy of surveys and applicable posting and barricade requirements. The inspector obtained this information through: interviews with PSEG Nuclear personnel; walkdowns of systems, structures, and components; and, examination of records, procedures, or other pertinent documents. The inspector determined if prescribed radiation work permits (RWPs), procedural and engineering controls were in place; whether PSEG Nuclear surveys and postings were complete and accurate; and if air samplers were properly located. The inspector reviewed RWPs used to access these and other high radiation areas to identify the acceptability of work control instructions or control barriers. The inspector reviewed electronic pocket dosimeter alarm set points (both integrated dose and dose rate) for conformity with survey indications and plant policy and reviewed portions of PSEG Nuclear's training and qualifications program for radiation workers to ensure that their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities. The controls implemented by PSEG Nuclear were compared to those required under plant technical specifications (TS 6.12) and 10 CFR 20, Subpart G for control of access to high and locked high radiation areas.

The inspector also reviewed PSEG Nuclear Quality Assurance Assessment Report 2002-0040, conducted during early 2002, entitled "Surveys and Monitoring."

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed ALARA job evaluations, exposure estimates, and exposure mitigation requirements and compared ALARA plans with the results achieved. A review was conducted of the integration of ALARA requirements into work procedures and RWP documents, the accuracy of person-hour estimates and person-hour tracking, and generated shielding requests and their effectiveness in dose rate reduction. The

inspector obtained this information via: interviews with PSEG Nuclear personnel; walkdowns of systems, structures, and components; and, examination of records, procedures, or other pertinent documents.

A review of actual exposure results (121.016 rem) versus revised outage exposure estimates (123.904 rem) for work performed during the spring 2002 Unit 2 refueling outage (2R12) was conducted including: comparison of estimated and actual dose rates and person-hours expended; determination of the accuracy of estimations to actual results; and determination of the level of exposure tracking detail, exposure report timeliness and exposure report distribution to support control of collective exposures to determine conformance with the requirements contained in 10 CFR 20.1101(b). Work activities reviewed included: reactor maintenance (goal of 32.474 rem, actual exposure 31.135 rem); eddy current testing of steam generators (goal of 8.517 rem, actual exposure 8.517 rem [revised goal established after the conclusion of this work activity]); reactor coolant pump and motor work (goal of 3.753 rem; actual exposure 3.956 rem); in-service inspection (goal of 9.500 rem, actual exposure 8.871 rem); and, split pin work (goal of 10.000 rem, actual exposure 9.854 rem).

The inspector also conducted a review of exposure goals established for the upcoming Fall 2002 Unit 1 refueling outage (1R15). An outage goal of 102.555 rem has been established by PSEG Nuclear, including the following work activities and their outage exposure goal: reactor maintenance (18.500 rem); primary steam generator work [including eddy current testing] (20.335 rem); reactor coolant pump and motor work (3.460 rem); and, in-service inspection (7.700 rem).

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector reviewed field instrumentation utilized by radiation protection technicians and plant workers to measure radioactivity, including portable field survey instruments, friskers, portal monitors and small article monitors. The inspector conducted a review of selected radiation protection instruments observed in the RCA, specifically verification of proper function and certification of appropriate source checks for these instruments which were utilized to ensure that occupational exposures are maintained in accordance with 10 CFR 20.1201. The inspector also reviewed documentation establishing the traceability of radiation sources utilized for survey instrument calibration to the National Institute of Standards and Technology (NIST). The inspector obtained this information via: interviews with PSEG Nuclear personnel; walkdown of systems, structures, and components; and, examination of records, procedures, or other pertinent documents.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Physical Protection (PP)

3PP3 Response to Contingency Events

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to "yellow," a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed PSEG Nuclear personnel and security staff, observed the conduct of security operations, and assessed implementation of the threat level "orange" protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

Occupational Radiation Safety Cornerstone

a. Inspection Scope

The inspector reviewed a listing of Salem Unit 1 & 2 licensee event reports for the period January 1, 2002 through September 15, 2002 for issues related to the occupational radiation safety performance indicator, which measures non-conformances with high radiation areas greater than 1R/hr and unplanned personnel exposures greater than 100 mrem TEDE, 5 rem SDE, 1.5 rem LDE, or 100 mrem to the unborn child.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Sections R13, R15 and R22.1 of this report described PSEG Nuclear's failure to take adequate corrective actions for equipment problems involving degraded conditions on the Unit 1 auxiliary building ventilation system charcoal adsorber bank, the Unit 2 auxiliary building ventilation system and the Unit 1 spray additive tank. Each of these issues was treated as a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions". Notification 20116804 documents an adverse trend of ineffective corrective actions.

.2 Sections R17 and R22.2 of this report described corrective actions that PSEG Nuclear has taken in response to water hammer events that have occurred in the Unit 2 RHR system. At the end of the report period, engineering evaluations and corrective actions were ongoing. Notifications that evaluated and documented these events included: 2011361, 20113051, 20113054, 20111363, 20110575, 20109152, 20108950, 20102648, 20099608 and 20079293.

4OA3 Event Follow-up

.1 (Closed) LER 50-272/02-002-00: 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 R22 of this report and is closed.

.2 (Closed) Special Report 50-311/02-003-00 & 50-311/02-003-01: Failure to Maintain Elements of the Salem Fire Protection Program. This Special Report described a violation of the Fire Protection Program (License Condition 2.C.10) resulting from tracer gas tests that identified that leakage from the Salem Unit 1 and Unit 2 4160 Volt switchgear rooms, 460 Volt Switchgear Rooms and Elevation 78 foot Lower Electrical Penetration Areas was sufficient to prevent the CO_2 system from reaching and maintaining the 50 percent CO_2 concentration for a hold time of 20 minutes as required by the NFPA-12, Standard on Carbon Dioxide Extinguishing Systems. The Special Report is described in further detail in Section R5 of this report and is closed.

.3 (Closed) Special Report 50-272/2002-003-00: Waste Gas Oxygen Analyzer Inoperable Greater Than 30 Days due to Low Sensor Output. This report described a condition where the Unit 1 waste gas analyzer failed its channel calibration check due to a failure of the oxygen sensor. PSEG Nuclear implemented the TS required alternate sampling method described in TS 3.3.3.9.b and subsequently returned the oxygen sensor to service. This issue was considered minor and the special report is closed.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 11, 2002, the inspectors presented their overall findings to members of PSEG Nuclear management led by Mr. Carlin, Mr. Garchow and Mr. O'Connor. PSEG Nuclear management stated that none of the information reviewed by the inspectors was considered proprietary.

.2 PSEG Nuclear/NRC Management Meeting

On July 12, 2002, Mr. H. Miller, Regional Administrator, NRC Region I, visited the Salem and Hope Creek sites. The visit included a tour of the Salem units, a meeting with senior PSEG Nuclear management including Mr. T. O'Connor and Mr. J. Carlin, and discussions with members of the resident inspector staff.

ATTACHMENT 1
SUPPLEMENTAL INFORMATION

a. Key Points of Contact

J. Carlin, Vice President - Nuclear Reliability and Technical Support
D. Garchow, Vice President - Operations
T. O'Conner, Vice President - Maintenance
L. Waldinger, Director - Site Operations
C. Fricker, Operations Manager - Salem
G. Salamon, Manager - Licensing
K. O'Hare, Radiation Protection Manager (Acting)
T. Celmer, Radiation Protection Manager
V. Fregonese, Manager, Design Engineering
S. Mannon, Manager, Service Water & Circulating Water Project
J. Melchionna, Reliability Engineer - SW Programs
G. Morrison, Engineering Supervisor, Design Analysis
M. Welker, Reliability Engineer - SW Systems

b. List of Items Opened, Closed, and Discussed

Opened:

50-272&311/02-07-01	URI	PSEG Nuclear failed to properly maintain room isolation barriers and improperly implemented a modification to the switchgear penetration area ventilation system that resulted in a failure of the automatic suppression systems to meet the carbon dioxide concentration requirements in six safety-related fire protection areas (three areas at each unit). (Section R05.2)

Opened/Closed:

50-311/02-07-02	NCV	PSEG failed to implement prompt and effective corrective actions subsequent to a January 2001 surveillance test. (Section R13)
50-311/02-07-03	NCV	PSEG Nuclear failed to promptly identify and correct the cause for an improper airflow condition that degraded the radioactive removal capability of the ABV system. (Section R15.3)

50-311/02-07-04	NCV	PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. (Section R22.1)

Closed:

50-272/02-002-00	LER	Containment Spray Additive Tank Exceeded Technical Specification Limit Allowable Outage Time. (Section OA3)
50-272/02-003-00	Special Report	Waste Gas Oxygen Analyzer Inoperable Greater Than 30 Days due to Low Sensor Output. (Section OA3)
50-311/02-003-00 and 50-311/02-003-01	Special Report	Failure to Maintain Elements of the Report Salem Fire Protection Program. (Section OA3)

c. List of Documents Reviewed

In addition to the documents identified in the body of this report, the inspectors reviewed the following documents and records:

Notifications/Work Orders

20041386/80017769
20057455/80024676
20057539/80024761
20065168/80028047
20068264/60019957
20080232/80035660
20083553/70021145
20084186/70021318
20084852/60024889
20086669/70021994
20088003/70022347
20088003/60024805
20090303/70022791
20094854/70023765
20109730/

Procedures

SC.MD-PM.DG-0017(Q),	Diesel Generator Lube Oil and Jacket Water Cooler Internal Inspection
S1&2.OP-PT.SW-0006(Q),	Service Water Biofouling Monitoring - Diesel Generators
SC.MD-PM.SW-0001(Q)	Service Water Rubber Expansion Joint Maintenance

Other Documents

PSEG Letter NLR-N90021	Response to Generic Letter 89-13, dated January 26, 1990
PSEG Letter NLR-N90165	Revised Response to Generic Letter 89-13, dated August 31, 1990
Work Order 30001448	Internal Inspection - 1A Diesel Generator Jacket Water Cooler
Work Order 30004459	Internal Inspection - 2B Diesel Generator Jacket Water Cooler
S-C-SW-MDC-1500	Biofouling Monitoring and Trending Calculation (Pages 1-32)
SW System Health Reports	Units 1 & 2, Period January 1 to March 31, 2002

d. List of Acronyms

ABV	Auxiliary Building Ventilation
ALARA	As Low As Is Reasonably Achievable
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CVCS	Chemical Volume Control System
CW	Circulating Water
DCP	Design Change Package
EDGs	Emergency Diesel Generators
GPM	Gallons Per Minute
HSAS	Homeland Security Advisory System
HX	Heat Exchanger
I&C	Instrument and Controls
IR	Inspection Report
LDE	Lens Dose Equivalent
MR	Maintenance Rule
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
OD	Operability Determination
OHS	Office of Homeland Security
OS	Operations Superintendent
PI&R	Problem Identification and Resolution
PARS	Publicly Available Records
PMT	Post Maintenance Testing
PSEG	Public Service Electric Gas
RCA	Radiologically Controlled Area
RHR	Residual Heat Removal
RIS	Regulatory Information Summary
RWP	Radiation Work Permit
RWST	Refueling Water Storage Tank
SAT	Spray Additive Tank

SDE	Shallow Dose Equivalent
SDP	Significance Determination Process
SI	Safety Injection
SORC	Station Operations Review Committee
SPAV	Switchgear and Penetration Area Ventilation
SSPS	Safety System Protection System
SW	Service Water
TARP	Transient Assessment Response Plan
TEDE	Total Effective Dose Equivalent
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report