



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

May 12, 2010

Mr. Thomas P. Joyce
President and Chief Nuclear Officer
PSEG Nuclear LLC - N09
P.O. Box 236
Hancock's Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2 -
NRC INTEGRATED INSPECTION REPORT 05000272/2010002 and
05000311/2010002

Dear Mr. Joyce:

On March 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Salem Nuclear Generating Station, Unit Nos. 1 and 2. The enclosed integrated inspection report documents the inspection results discussed on April 1, 2010, with Mr. Fricker 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.

The report documents one self-revealing finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program (CAP), the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, 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 Inspector at the Salem Nuclear Generating Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Salem Nuclear Generating Station. The information you provide will be considered in accordance with Inspection Manual Chapter (IMC) 0305.

T. Joyce

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Sincerely,

A handwritten signature in black ink, appearing to read 'Arthur L. Burritt', with a long horizontal line extending to the right.

Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000272/2010002 and 05000311/2010002
w/Attachment: Supplemental Information

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Sincerely,
/RA/

Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

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Enclosure: Inspection Report 05000272/2010002 and 05000311/2010002
w/Attachment: 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: 05000272/2010002 and 05000311/2010002

Licensee: PSEG Nuclear LLC (PSEG)

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

Location: P.O. Box 236
Hancocks Bridge, NJ 08038

Dates: January 1, 2010 through March 31, 2010

Inspectors: D. Schroeder, Senior Resident Inspector
H. Balian, Resident Inspector
J. Furia, Senior Health Physicist

Approved By: Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000272/2010002, 05000311/2010002; 01/01/2010 - 03/31/2010; Salem Nuclear Generating Station Unit Nos. 1 and 2; Event Follow-up.

The report covered a three-month period of inspection by resident inspectors, and an announced inspection by a regional radiation specialist. One Green NCV was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using IMC 0609, "Significance Determination Process" (SDP) and the cross-cutting aspect of a finding is determined using IMC 0305, "Operating Reactor Assessment Program." 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 4, dated December 2006.

Cornerstone: Mitigating Systems

- Green. A self-revealing NCV of TS 3.7.10, "Chilled Water System, Auxiliary Building Subsystem," was identified because the 12 chiller tripped on low chill water temperature during the starting of the 13 chiller for post-maintenance testing on December 7, 2010. The inspectors determined that the cause of the chiller trip was inadequate troubleshooting that was conducted after the 12 chiller tripped on December 4, 2010. Corrective actions included calibration of the low temperature trip instrument and raising the priority placed on correcting problems with the chillers. This issue was placed in PSEG's corrective action program.

The performance deficiency was more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent adverse consequences. Specifically, not conducting adequate troubleshooting in accordance MA-AA-716-004 affected the reliability of the emergency control air system by reducing the capability of the chilled water system to cool the emergency control air compressor. The finding was evaluated under IMC 0609, Attachment 4, Phase 1 screening, and was determined to require additional evaluation. The finding was subsequently evaluated in Phase 3 utilizing the Salem Standardized Plant Analysis Risk (SPAR) Model, Revision 3.51 with the Graphical Interface Module (GEM) 7, and confirmed to be of very low safety significance (Green). This performance deficiency has a cross-cutting aspect in the area of human performance because PSEG personnel did not use conservative assumptions in decision making and adopt a requirement that the proposed action is safe in order to proceed. Specifically, when the complex troubleshooter was completed after the 12 chiller trip on December 4 and no cause for the chiller trip was identified, PSEG did not appropriately reconsider validating the low temperature trip set point in accordance with the step originally included in the complex troubleshooter documentation. (Section 4OA3.3) [H.1(b)].

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REPORT DETAILS

Summary of Plant Status

Salem Nuclear Generating Station Unit No. 1 (Unit 1) began the period at full power. On January 3, operators lowered Unit 1 to 80 percent power when weather-related conditions caused a reduction in condenser cooling water flow. Operators returned Unit 1 to full power on January 5. On March 21, operators lowered Unit 1 to 90 percent power in response to a condensate system equipment problem. On March 27, operators returned Unit 1 to full power after repairs to the condensate system were completed. Unit 1 operated at or near full power for the remainder of the inspection period.

Salem Nuclear Generating Station Unit No. 2 (Unit 2) began the period at full power. On January 3, operators tripped Unit 2 when weather-related conditions caused a reduction in condenser cooling water flow. Operators returned Unit 2 to full power on January 5. On January 21, Unit 2 automatically tripped following a main feedwater system malfunction. Operators returned Unit 2 to full power on January 24. Unit 2 operated at or near full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01 - 1 sample)

.1 Evaluate Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors completed one impending adverse weather sample for the onset of high levels of river detritus. The inspector's reviewed PSEG's weather preparation activities related to potential river grass intrusion conditions. Inspectors assessed implementation of PSEG's grassing readiness plan through plant walk downs, corrective action program (CAP) review, and discussion with cognizant managers and engineers. Documents reviewed by inspectors are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 - 4 samples)

.1 Partial Walk down

a. Inspection Scope

The inspectors completed four partial system walkdown inspection samples. The inspectors walked down the systems listed below to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors

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focused their review on potential discrepancies that could impact the function of the system and increase plant risk. The inspectors reviewed applicable operating procedures, walked down control systems components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that PSEG properly utilized its CAP to identify and resolve equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers. Documents reviewed are listed in the Attachment.

- Unit 2 auxiliary feedwater (AFW) system on January 13 and 14 during and after maintenance to the 23 AFW pump
- Unit 1 and 2 rod control system on February 1 and 2 after manual alignment of the master cyclor
- Unit 1 residual heat removal (RHR) on February 17 and 19 during and after maintenance affecting the 11 RHR train
- Unit 2, 2B and 2C emergency diesel generators (EDG) and support systems following emergent inoperability of the 2A EDG on March 31

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 4 samples; 71111.05A - 1 sample)

.1 Fire Protection – Tours

a. Inspection Scope

The inspectors completed four quarterly fire protection inspection samples. The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with PSEG's administrative procedures; fire detection and suppression equipment was available for use; that passive fire barriers were maintained in good material condition; and that compensatory measures for out of service, degraded, or inoperable fire protection equipment were implemented in accordance with PSEG's fire plan. Documents reviewed are listed in the Attachment.

- Unit 1 auxiliary building, elevations 45' and 55'
- Salem common switchyard
- Unit 1 fuel handling building
- Unit 1 mechanical penetration area

b. Findings

No findings of significance were identified.

.2 Fire Protection – Drill Observation

a. Inspection Scope

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The inspectors completed one fire drill observation inspection sample. The inspectors observed an unannounced fire drill conducted in the 2B EDG room. The inspectors observed the drill to evaluate the readiness of the plant fire brigade to fight fires. The inspectors verified that PSEG staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief; and took appropriate corrective actions. Specific attributes evaluated were: proper wearing of turnout gear and self-contained breathing apparatus; proper use and layout of fire hoses; employment of appropriate fire fighting techniques; sufficient fire fighting equipment brought to the scene; effectiveness of fire brigade leader communications, command, and control; search for victims and propagation of the fire into other plant areas; smoke removal operations; utilization of pre-planned strategies; and adherence to the pre-planned drill scenario and drill objectives.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

.1 Internal Flooding

a. Inspection Scope

The inspectors completed one internal flooding area inspection sample. The inspectors evaluated flood protection measures for the Unit 1 and Unit 2 safety injection pump rooms. The inspectors walked down the areas to assess the operational readiness to protect redundant safety-related components and vital electric power systems from internal flooding. These features included plant drains, flood barrier curbs, and motor spray shields. The inspectors also reviewed the results of flooding evaluations, preventive maintenance history, and corrective action notifications associated with flood protection measures. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Recualification Program (71111.11Q - 1 sample)

.1 Regualification Activities Review by Resident Staff

a. Inspection Scope

The inspectors completed one quarterly licensed operator requalification program sample. Specifically, the inspectors observed an unannounced simulator scenario on January 19. The scenario included clogging of a service water (SW) strainer, followed by a SW leak into the SW intake structure leading to a loss of all three SW pumps in the affected bay. This was followed by a steam generator feed pump trip and rapid load reduction. During the load reduction, turbine vibrations necessitated a plant trip. The

trip was complicated by a loss of one vital electrical power bus and a total loss of AFW, that required the crew to recover the secondary heat sink by feeding steam generators with main condensate pumps.

The inspectors reviewed operator actions to implement the abnormal and emergency operating procedures. The inspectors examined the operators' ability to perform actions associated with high risk activities, the Emergency Plan, previous lessons learned items, and the correct use and implementation of procedures. The inspectors observed and verified that the deficiencies were adequately identified, discussed, and entered into the CAP, as appropriate. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12. Maintenance Effectiveness (71111.12 - 2 samples)

a. Inspection Scope

The inspectors completed two quarterly maintenance effectiveness inspection samples. The inspectors reviewed performance monitoring and maintenance effectiveness issues for one component and reviewed PSEG's periodic evaluation of maintenance effectiveness at Salem that was conducted in accordance with 10 CFR 50.65 (a)(3). The inspectors reviewed PSEG's process for monitoring equipment performance and assessing preventive maintenance effectiveness. The inspectors verified that systems and components were monitored in accordance with the Maintenance Rule Program requirements. The inspectors compared documented functional failure determinations and unavailability hours to those being tracked by PSEG to evaluate the effectiveness of PSEG's condition monitoring activities and to determine whether performance goals were being met. The inspectors reviewed applicable work orders (WOs), corrective action notifications, and preventive maintenance tasks. The documents reviewed are listed in the Attachment. The inspectors evaluated the structures, systems, and components (SSCs) listed below:

- Unit 1 and 2 containment fan coil unit SW outlet valves (SW72); and
- Salem periodic evaluation on maintenance effectiveness.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 4 samples)

a. Inspection Scope

The inspectors completed four maintenance risk assessment and emergent work control inspection samples. The inspectors reviewed the maintenance activities listed below to verify that the appropriate risk assessments were performed as specified by 10 CFR 50.65(a)(4) prior to removing equipment for work. The inspectors reviewed the applicable risk evaluations, work schedules and control room logs for these

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configurations. PSEG's risk management actions were reviewed during shift turnover meetings, control room tours, and plant walk downs. The inspectors also used PSEG's on-line risk monitor (equipment OOS workstation) to gain insights into the risk associated with these plant configurations. The inspectors reviewed notifications documenting problems associated with risk assessments and emergent work evaluations. Documents reviewed are listed in the Attachment.

- Unit 1, 11 component cooling heat exchanger (CCHX) unavailability during planned maintenance on January 20
- Unit 1, concurrent unavailability of the 12 component cooling water pump and the station gas turbine generator for planned maintenance on March 17
- Unit 1 & 2, concurrent unavailability of the Unit 2 control room emergency air conditioning system and the station gas turbine generator for planned maintenance on March 18
- Unit 2, emergent unavailability of the 2A EDG on March 31

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 5 samples)

a. Inspection Scope

The inspectors completed five operability evaluation inspection samples. The inspectors reviewed the operability determinations for degraded or non-conforming conditions associated with:

- Unit 1 and Unit 2 engineered safeguards feature to automatically start motor driven AFW pumps after both main feedwater pumps have tripped;
- Unit 2 intermediate range nuclear instrument following 21 steam generator feedwater pump (SGFP) trip;
- Unit 2, 21 safety injection pump given an oil leak from the pump outboard bearing;
- Unit 1 rod position indication given malfunction of a rod step counter; and
- Unit 1, operability of the chemical volume control system (CVCS) given elevated packing leakage from the 13 CVCS pump.

The inspectors reviewed the technical adequacy of the operability determinations to ensure the conclusions were justified. The inspectors also walked down accessible equipment to corroborate the adequacy of PSEG's operability determinations. Additionally, the inspectors reviewed other PSEG identified safety-related equipment deficiencies during this report period and assessed the adequacy of their operability screenings. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 7 samples)

a. Inspection Scope

The inspectors completed seven post-maintenance testing (PMT) inspection samples. The inspectors observed portions of and/or reviewed the PMT results for the maintenance activities listed below. The inspectors verified that the effect of testing on the plant was adequately addressed by control room and engineering personnel; testing was adequate for the maintenance performed; acceptance criteria were clear, demonstrated operational readiness and were consistent with design and licensing basis documentation; test instrumentation was calibrated, and the appropriate range and accuracy for the application; tests were performed, as written, with applicable prerequisites satisfied; and equipment was returned to an operational status and ready to perform its safety function. Documents reviewed are listed in the Attachment.

- WO 60087342, planned corrective maintenance on 2MS52, AFW pump turbine trip valve;
- WO 30114399, planned preventive maintenance on 14SW72 14 CFCU SW outlet isolation valve;
- WO 30143571, planned maintenance on 22 auxiliary building ventilation exhaust fan;
- WO 30101989, planned maintenance on 11SW153, RHR pump room cooler SW control valve pneumatic actuator;
- WO 30184621, emergent corrective maintenance on 22SW24, 22 SW strainer blow down valve pneumatic actuator;
- WO 30131853, planned maintenance and modification to 11CC16, 11 RHR HX outlet MOV; and
- WO 60089388, emergent maintenance on the 22 SW strainer.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

.1 Plant Trip Following 21 SGFP Trip

a. Inspection Scope

On January 21, Unit 2 tripped following a trip of the 21 SGFP that led to low steam generator water levels. The 22 SGFP also tripped shortly after the plant tripped due to an initially unknown cause. Due to this complication, prior to plant start-up, the inspectors conducted risk-informed walk downs of essential Unit 2 SSCs to independently assess their readiness for plant restart and PSEG's configuration control. The inspectors walked down accessible portions of the following Unit 2 systems/areas: EDGs, vital 4KV switchgear and 480V motor control centers, component cooling water, safety injection, fuel oil transfer and storage, AFW, and control room instrumentation panels. The inspectors observed startup activities, including initial latching and startup of the 22 SGFP, rod control startup, main turbine latching, and initial roll of the main turbine.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 samples)a. Inspection Scope

The inspectors completed five surveillance testing inspection samples. The inspectors observed portions of and/or reviewed results for the surveillance tests to verify, as appropriate, whether the applicable system requirements for operability were adequately incorporated into the procedures and that test acceptance criteria were consistent with procedure requirements, the technical specification (TS) requirements, the updated final safety analysis report (UFSAR), and the American Society of Mechanical Engineers Code, Section XI for pump and valve testing. Documents reviewed are listed in the Attachment.

- S1.OP-ST.DG-0013, 1B Diesel Generator Endurance Run
- S2.OP-ST.RC-0008, Unit 2 Reactor Coolant System (RCS) Water Inventory Balance
- S2.IC-SC.RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II
- S2.OP-ST.SJ-0001, Inservice Testing (IST) of 21 Safety Injection Pump
- S1.OP-ST.SW-0001, IST of 11 SW Pump

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 3 samples).1 Simulator Scenario Observation on January 19a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. On January 19, the inspectors observed a drill from the control room simulator during an evaluated licensed operator requalification training scenario. The inspectors evaluated operator performance related to developing event classifications and notifications. The inspectors reviewed the Salem Event Classification Guides. The inspectors referenced Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator (PI) Guideline," Revision 5, and verified that PSEG correctly counted the evaluated scenario's contribution to the NRC PI for drill and exercise performance.

b. Findings

No findings of significance were identified.

.2 Training Drill Observation on February 23a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. On February 23, 2010, the inspectors observed a training drill from the control room simulator, the technical support center, and the operations support center. The inspectors attended the drill debrief to ensure that PSEG captured drill deficiencies in their critique. The inspectors evaluated the drill performance related to developing event classifications and notifications. The inspectors reviewed the Salem Event Classification Guides and Emergency Plans. The inspectors referenced NEI 99-02, "Regulatory Assessment PI Guideline," Revision 5, and verified that PSEG correctly counted the drill's contribution to the NRC PI for drill and exercise performance.

b. Findings

No findings of significance were identified.

3. Practice Exercise Observation on March 24

a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. On March 24, 2010, the inspectors observed a training drill from the technical support center. The inspectors evaluated licensee performance relative to developing event classifications and notifications. The inspectors reviewed the Salem Event Classification Guides and Emergency Plans. The inspectors referenced NEI 99-02, "Regulatory Assessment PI Guideline," Revision 5, and verified that PSEG correctly counted the drill's contribution to the NRC PI for drill and exercise performance.

b. Findings

No findings of significance were identified.

2. **RADIATION SAFETY**

Cornerstone: Radiation Safety – Public and Occupational

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

PSEG's program was evaluated against the requirements contained in the Salem Station Off-Site Dose Calculation Manual (ODCM) for the calibration and maintenance of radiation monitoring equipment utilized in measuring plant effluents.

Walkdowns and Observations

The inspectors walked down effluent radiation monitoring systems, including liquid and gaseous system. The inspectors verified that effluent/process monitor configurations aligned with ODCM descriptions.

Calibration and Testing Program

Process and Effluent Monitors

The inspectors verified that channel calibration and functional tests were performed consistent with radiological effluent technical specifications (RETS)/ODCM. The inspectors verified that (a) PSEG calibrated its monitors with National Institute of Standards and Technology (NIST) traceable sources, (b) if a primary calibration, it adequately represented the plant nuclide mix, (c) if a secondary calibration, it verified the primary calibration, and (d) the channel calibrations encompassed the instrument's alarm setpoints.

The inspectors verified that effluent monitor alarm setpoints were established as provided in the ODCM and station procedures. For changes to effluent monitor setpoints, the inspector evaluated the basis for changes to ensure that an adequate justification existed.

b. Findings

No findings of significance were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06 - 1 sample)

a. Inspection Scope

PSEG's program was evaluated against the requirement to provide adequate protection of the public from effluent releases resulting from normal operations of the plant by maintaining the dose to the maximally exposed member of the public as far below the dose limits in 10 CFR Part 20 and 40 CFR Part 190, as low as is reasonably achievable (ALARA). Criterion 60 in 10 CFR Part 50 Appendix A, requires the control and appropriate mitigation of radioactive materials released as plant effluents. In addition, Paragraph 50.34a (and the associated Appendix I) to 10 CFR Part 50 provide dose based design criteria to ensure the effectiveness of plant effluent processing systems in maintaining effluent releases to the plant environs ALARA.

Event Report and Effluent Report Reviews

The inspectors reviewed the radiological effluent release reports issued since the last inspection. The inspectors verified that the reports were submitted as required by the ODCM/TSS. The inspectors identified radioactive effluent monitor operability issues reported by PSEG as provided in effluent release reports, and verified that the issues were entered into the CAP and adequately resolved.

ODCM and Final Safety Analysis Report (FSAR) Reviews

The inspectors reviewed changes to the ODCM made by PSEG since the last inspection versus the guidance in NUREG-1301, 1302 and 0133 and Regulatory Guides (RGs) 1.109, 1.21 and 4.1. The inspectors verified that PSEG did not identify any contaminated non-radioactive systems that were disclosed either through an event report or were documented in the ODCM since the last inspection.

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Groundwater Protection Initiative (GPI) Program

The inspectors reviewed reported groundwater monitoring results, and changes PSEG's written program for identifying and controlling contaminated spills/leaks to groundwater.

Procedures, Special Reports & Other Documents

The inspectors reviewed licensee event reports (LERs), event reports and/or special reports related to the effluent program issued since the previous inspection. The inspectors identified no additional focus areas for the inspection based on the scope/breadth of problems described in these reports. The inspectors also reviewed effluent program implementing procedures, particularly those associated with effluent sampling, effluent monitor set point determinations and dose calculations.

Walk downs and Observations

The inspectors walked down selected components of the gaseous and liquid discharge systems to verify that equipment configuration and flow paths were in accordance with procedures, and to review and assess equipment material condition. For equipment or areas associated with the systems selected that were not readily accessible due to radiological conditions, the inspectors reviewed PSEG's material condition surveillance records. The inspectors walked down those filtered ventilation systems whose test results were reviewed during the inspection. The inspectors verified that there were no conditions, such as degraded high-efficiency particulate air (HEPA)/charcoal banks, improper alignment, or system installation issues that would impact the performance, or the effluent monitoring capability of the effluent system. The inspectors verified that PSEG did not make significant changes to their effluent release points.

The inspectors observed the routine processing and discharge of effluents (including sample collection and analysis). The inspectors verified that appropriate effluent treatment equipment was used and that radioactive liquid waste was processed and discharged in accordance with procedure requirements and discharge permits.

Sampling and Analyses

The inspectors reviewed selected effluent sampling activities and verified that adequate controls were implemented to ensure representative samples were obtained (e.g. provisions for sample line flushing, vessel recirculation, composite samplers, etc.). The inspectors verified that the facility did not routinely rely on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the inter-laboratory comparison program to verify the quality of the radioactive effluent sample analyses. The inspectors verified that the inter-laboratory comparison program include hard-to-detect isotopes as appropriate.

Instrumentation and Equipment

Effluent Flow Measuring Instruments

The inspectors reviewed PSEG's methodology for determining effluent stack and vent flow rates. The inspectors verified that the flow rates were consistent with RETS/ODCM and FSAR values, and that differences between assumed and actual stack and vent flow rates did not affect the results of the projected public doses.

Air Cleaning Systems

The inspectors reviewed the surveillance test results for testing completed since the previous inspection for TS required ventilation effluent discharge systems (HEPA and charcoal filtration meet TS acceptance criteria).

Dose Calculations

The inspectors reviewed radioactive liquid and three gaseous waste discharge permits. The inspectors verified that the projected doses to members of the public were accurate and based on representative samples of the discharge path. The inspectors evaluated the methods used to determine the isotopes that were included in the source term to ensure all applicable radionuclides were included, within detectability standards. The inspectors also reviewed the current Part 61 analyses to ensure hard-to-detect radionuclides were included in the source term.

The inspectors reviewed changes in PSEG's offsite dose calculations since the last inspection. The inspector verified that the changes were consistent with the ODCM and RG 1.109. The inspectors reviewed meteorological dispersion and deposition factors used in the ODCM and effluent dose calculations to ensure appropriate factors were being used for public dose calculations. The inspectors reviewed the latest Land Use Census and verified that changes were factored into the dose calculations.

GPI Implementation

The inspector verified that PSEG was continuing to implement the voluntary NEI/Industry GPI since the last inspection. The inspectors reviewed monitoring results of the GPI to determine if PSEG had implemented its program as intended, and to identify any anomalous results.

The inspectors reviewed identified leakage or spill events and entries made into 10 CFR 50.75 (g) records. The inspectors reviewed evaluations of leaks or spills, and reviewed any remediation actions taken for effectiveness. The inspectors reviewed onsite contamination events involving contamination of groundwater.

The inspectors verified that on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year were documented in the Annual Radiological Environmental Operating Report for Radiological Environmental Monitoring Program or the Annual Radiological Effluent Release Report for the RETS.

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Problem Identification and Resolution (PI&R)

The inspectors verified that problems associated with the effluent monitoring and control program were being identified by PSEG at an appropriate threshold and were properly addressed for resolution in the CAP.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator (PI) Verification (71151 - 6 samples)

a. Inspection Scope

The inspectors reviewed PSEG submittals for the Unit 1 and Unit 2 Mitigating Systems cornerstone PIs and the Unit 1 and Unit 2 Barrier Integrity cornerstone PIs discussed below. Data reviewed was for all four quarters of calendar year 2009. To verify the accuracy of the PI data reported during this period, the data was compared to the PI definition and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 5.

Cornerstone: Mitigating Systems

- Unit 1 and 2 Safety System Functional Failures

Cornerstone: Barrier Integrity

- Unit 1 and 2 Reactor Coolant System (RCS) Unidentified Leak Rate; and
- Unit 1 and 2 RCS Specific Activity.

The inspectors reviewed main control room logs and were familiar with leak rate data through plant status reviews required by NRC IMC 2515, Appendix D, "Plant Status."

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered into the CAP

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of all items entered into PSEG's CAP. This was accomplished by reviewing the description of each new

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notification and attending daily management review committee meetings. Documents reviewed are listed in the Attachment.

b. Inspection Scope

No findings of significance were identified.

4OA3 Event Follow-up (71153 - 3 samples)

.1 Plant Trip in Response to Loss of Circulating Water

a. Inspection Scope

On January 3, operators manually tripped Unit 2 in response to a loss of circulating water caused by freezing conditions in the Delaware Bay. The inspectors responded to the plant to observe control room activities following the trip and to assess plant conditions. The inspectors completed walk downs of the SW intake structure and circulating water intake structure to assess severity of conditions and any potential impact on the ultimate heat sink.

b. Findings

No findings of significance were identified.

.2 Plant Trip following 21 Steam Generator Feed Pump Trip

a. Inspection Scope

On January 21, Unit 2 automatically tripped following a trip of the 21 SGFP that led to low steam generator water levels. The 22 SGFP tripped shortly after the plant trip. The inspectors responded to the plant to observe control room activities following the trip and to assess plant conditions. The inspectors reviewed the sequence of events report, independently reviewed pre and post-trip conditions for potential impacts on safety-related equipment and reviewed PSEG's post-trip report prior to restart.

Following plant stabilization in Mode 3, the inspectors conducted risk-informed walk downs of essential Unit 2 SSCs that were potentially impacted by the plant transient to independently assess their condition and functionality and to ensure that PSEG adequately identified conditions adverse to quality during their post-event walk downs. The inspectors walked down accessible portions of the following Unit 2 systems: main steam (including main steam isolation valves), feed and condensate (including the steam generator feed pumps and controls), AFW, atmospheric relief valves and steam dumps, reactor trip breakers, and control room instrumentation panels.

b. Inspection Scope

No findings of significance were identified.

.3 (Closed) LER 05000272/2009-001-01, Chillers Inoperability Exceeds TS Allowed Outage Time

a. Inspection Scope

On December 7, 2009, during post maintenance operability testing for the 13 chiller, the 12 chiller tripped on low temperature freeze protection. Because two chillers were inoperable operators entered a 72-hour TS LCO shutdown action statement. Detailed troubleshooting for the 12 chiller trip determined that the low temperature trip switch for the 12 chiller was set 7 °F above its required setpoint. The cause analysis determined that this incorrect switch setting existed between December 2, 2009, and December 7, 2009. As a result, PSEG determined that the two chillers, 12 and 13, were inoperable for longer than the 72 hours allowed by TS 3.7.10, action b.3. The inspectors completed a review of this LER and identified one finding of very low safety significance as documented below. This LER is closed.

b. Findings

Introduction: A self-revealing Green non-cited violation of Technical Specification (TS) 3.7.10, Chilled Water System, Auxiliary Building Subsystem, was identified because the 12 chiller tripped on low chill water temperature during the starting of the 13 chiller for post-maintenance testing on December 7, 2010. The inspectors determined that the cause of the chiller trip was inadequate troubleshooting that was conducted after the 12 chiller tripped on December 4, 2010. Specifically, technicians did not verify the setpoint for the 12 chiller low temperature trip in accordance with the troubleshooting steps defined by the original complex troubleshooter.

Description: The chilled water system provides space cooling to several plant areas and equipment cooling to the safety-related emergency control air compressor. Each unit has three chillers that are required to be operable during normal power operations.

On November 30, 2009, the 12 chiller was removed from service for maintenance and design change installation. With one chiller inoperable, operators entered a 14-day shutdown action statement for TS 3.7.10. On December 2, 2009, operators declared the 13 chiller inoperable due to an emergent failure. At that time, because the 12 chiller was still out of service for maintenance, the emergent failure required operators to enter a 72-hour shutdown action statement for TS 3.7.10. Approximately 24 hours later on December 4, PSEG completed maintenance on the 12 chiller; but it subsequently tripped on freeze protection during the post maintenance test. PSEG completed troubleshooting using the guidance provided in PSEG procedure MA-AA-716-004, Conduct of Troubleshooting, but did not identify a cause for the low temperature trips.

After completion of troubleshooting on December 4, PSEG completed S1.OP-ST.CH-0004, Chilled Water System, chillers, to confirm 12 chiller operability. This testing ran the 12 chiller under a steady state load for seven hours. After successful completion of the testing, operators declared the 12 chiller operable and exited the 72 hour LCO shutdown action statement. At that time the plant remained in the original 14-day LCO shutdown action statement because the 13 chiller was still out of service for maintenance.

On December 7, 2009, after completion of 13 chiller maintenance, PSEG began operability testing for the 13 chiller. During this retest, the load on the 12 chiller changed as a result of starting the 13 chiller, and the 12 chiller again tripped on low temperature

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freeze protection. This time PSEG completed troubleshooting that included verification of the low temperature switch set point and, in fact, this troubleshooting determined that the low temperature trip switch was set 7 degrees F above its required setting.

PSEG determined that the low temperature freeze protection set point knob was probably turned during the design change installation on November 30, 2009. This maintenance involved pulling wires in the cabinet that housed the low temperature cutout switch adjustment knob. Because this switch setting existed between December 2 through December 7, while the 13 chiller was inoperable for maintenance, both the 12 and 13 chillers were inoperable for longer than the 72 hours allowed by TS 3.7.10 action b.3.

PSEG performed an apparent cause evaluation for this TS violation. PSEG determined that one of the causal factors for the TS violation was inadequate troubleshooting after the 12 chiller tripped on low temperature on December 4, 2009. As stated above, immediately after the trip, PSEG personnel approved a complex trouble shooting procedure that included an action to validate the set point of the low temperature trip set point, but PSEG did not perform that step because the switch was recently calibrated, it was not worked on during the recent maintenance and design change installation, and its set point did not typically drift. This decision appeared reasonable when it was originally approved. However, the inspectors determined that, after the complex troubleshooter was implemented and no cause for the chiller trip was identified, PSEG deviated from the guidance in its troubleshooting procedure because it did not appropriately reconsider validating the low temperature trip set point in accordance with the original troubleshooter before it declared the 12 chiller operable. As a result PSEG did not identify and correct the cause of the December 4, 2009, 12 chiller trip and did not restore the chiller to fully operable status, until the 12 chiller tripped again on December 7, 2009.

Analysis: The inspectors determined that, in accordance with MA-AA-716-004, Conduct of Troubleshooting, PSEG did not complete adequate troubleshooting following the December 4, 2009, trip of the 12 chiller. This resulted in operators returning the 12 chiller to operable status before it was fully operable, and operating the plant with both the 12 and 13 chillers inoperable for greater than the TS allowed outage time. This was a performance deficiency.

The inspectors determined that the performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, not conducting adequate troubleshooting in accordance MA-AA-716-004 affected the reliability of the emergency control air system by reducing the capability of the chilled water system to cool the emergency control air compressor. The finding was evaluated under MC 0609, Attachment 4, Phase 1 screening, and was determined to require additional evaluation. Specifically, the finding represented an actual loss of safety function of a single Train, for greater than its TS allowed outage time. The finding was evaluated in Phase 2 using Salem SDP Notebook and pre-solved tables and confirmed in Phase 3 utilizing the Salem Standardized Plant Analysis Risk (SPAR) Model, Rev 3.51 with the Graphical Interface Module (GEM) 7. Although one chiller was out of service for maintenance, and nominal test and

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maintenance is included in the model, the Phase 3 evaluation utilized a bounding assumption that both chillers had failed. With these bounding conditions, the finding was confirmed to be of very low safety significance (Green). The dominant accident sequences involved a loss of control air (LCA) coupled with failures of the station blackout compressor, failure to maintain steam generator level, and failure of auxiliary feedwater. Contributions from a large early release (LERF) and external events did not need to be considered due to low risk associated with this issue.

This performance deficiency has a cross-cutting aspect in the area of human performance because PSEG personnel did not use conservative assumptions in decision making and adopt a requirement that the proposed action is safe in order to proceed. Specifically, when the complex troubleshooter was completed after the 12 chiller trip on December 4 and no cause for the chiller trip was identified, PSEG did not appropriately reconsider validating the low temperature trip setpoint in accordance with the step originally included in the complex troubleshooter documentation. H.1(b)

Enforcement: TS 3.7.10, Chilled Water System, Auxiliary Building Subsystem, requires in part, that with two chillers inoperable, that at least one chiller be restored to operable status within 72 hours, or be in at least hot standby within the next six hours and in cold shutdown within the following 30 hours. Contrary to these requirements, PSEG's past operability evaluation demonstrated that the 12 chiller was inoperable during the period from December 2, 2009 through December 7, 2009, while the 13 chiller was also inoperable, which exceed the allowable outage time for having two chillers inoperable. The failure to comply with applicable limiting condition of operation completion times is a violation of PSEG's TS. However, because of the low safety significance and because it was entered into PSEG's corrective action program as Notification 20446414, the NRC is treating this issue as an NCV in accordance with Section VI.A.1 of the NRC's Enforcement Policy **NCV 05000272/2010002-01, Chillers Inoperability Exceeds TS Allowed Outage Time**

4OA5 Other Activities

.1 Steam Generator Replacement Inspection

a. Inspection Scope

On February 23-24, 2010, the inspectors observed the preparation and shipment of the first two used steam generators from Salem Unit 2.

In April 2008, Salem Unit 2 replaced all four of its steam generators, with the used steam generators placed in an outside storage location adjacent to the low-level radioactive waste storage building. The used generators were designated for burial at the Barnwell Low-Level Waste Disposal Facility.

The inspectors observed and reviewed:

- Securing of the two steam generators (SG-22 and SG-24) on a barge for transport to the Barnwell;

- Marking of the steam generators in accordance with Department of Transportation (DOT) SP-14455 (DOT Special Permit SP-14455 allows for the transport of the steam generators as a special shipment of a surface contaminated object (SCO-II);
- Uniform Waste Manifests (NRC Form 540 and NRC Form 541) for the steam generators to be shipped;
- Radiological postings and controls for the transportation activities; and
- Training of all personnel associated with the transport activity.

The inspectors also observed the movement of a steam generator (SG-21) from temporary laydown area #1 (adjacent to the low-level radioactive waste storage building) to temporary laydown area #2, adjacent to the barge dock.

The inspectors evaluated licensee activities against the requirements contained in 10 CFR 71.5, 10 CFR 20 and DOT SP-14455.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The inspectors presented the inspection results to Mr. C. Fricker and other members of PSEG management at the conclusion of the inspection on April 1, 2010. The inspectors asked PSEG whether any materials examined during the inspection were proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

C. Fricker	Site Vice President
S. Bowers	System Engineer
D. Boyle	Program Engineer
E. Eilola	Plant Manager
A. Garcia	System Engineer
F. Hummel	System Engineer
J. Morrison	Maintenance Supervisor
C. Pupek	Risk Engineer
M. Rahmani	System Engineer
J. Stead	System Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened/Closed

05000272/2010002-01	NCV	Chillers Inoperability Exceeds TS Allowed Outage Time (Section 4OA3.3)
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Closed

05000272/2009-001-01	LER	Chillers Inoperability Exceeds TS Allowed Outage Time (Section 4OA3.3)
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Discussed

None

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LIST OF DOCUMENTS REVIEWED

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

Section 1R01: Adverse Weather Protection

Procedures

WC-AA-107, Seasonal Readiness, Revision 8
S2.OP-AB.CW-0001(Q), Circulating Water System Malfunction Technical Bases Document
S2.OP-AB.CW-0001(Q), Circulating Water System Malfunction, Revision 30
EN-SA-403-1001, Salem River Grass Predictive Methodology, Revision 0
WC-AA-107, Seasonal Readiness, Revision 9
SC.OP-PT.ZZ-0002(Q), Grassing Season Inspection, Attachment 6

Notifications

20450635
20454211
20454219
20454451
20456022

Orders

80099966

Section 1R04: Equipment Alignment

Procedures

S1.OP-AB.ROD-0001, Immovable/Misaligned Control Rods, Revision 6
S1.OP-AB.ROD-0004, Rod Position Indication Failure, Revision 6
S1.OP-SO.RHR-0002, Terminating RHR, Revision 16
S2.OP-SO.RCS-0001, Rod Control System Operation, Revision 30
S2.OP-ST.RCS-0001, Reactivity Control System Rod Control Assemblies, Revision 19
SC.MD-PM.AF-0007, 13 and 23 AFW Terry Turbine Linkage Inspection and Lubrication, Revision 0
SC.MD-PM.ZZ-0010, Model 7700 and 8000 Line Motor Control Center Maintenance, Revision 20
SC.RE.SO.NIS-0001, Beacon Operation & Calculation Verification, Revision 7
SC.RE-RA.RCS-0017, Rod Cluster Control Assembly Position Verification, Revision 4

Drawings

203336
203409
205303

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Notifications

20378967
20385653
20429564
20435935
20435935
20448827
20448827
20448831
20449749

Orders

70089966
70103544

Other Documents

Tagging Work List 4265470, January 13, 2010
DE-CB.RCS-0041, Configuration Baseline Documentation, Rod Control and Rod Position
Indication Systems, Revision 1

Section 1R05: Fire Protection

Procedures

SC.MD-PM.ZZ-0010, Model 7700 and 8000 Line Motor Control Center Maintenance,
Revision 20
FRS-II-512, Salem – Unit 1 (Unit 2) Pre-fire Plan, Mechanical Piping Penetration Area
Elevations: 78' & 100', Revision 2
FRS-II-411, Salem – Unit 1 (Unit 2) Pre-fire Plan, Reactor Plant Auxiliary Equipment Area
Elevations: 45' & 55', Revision 2
FRS-II-711, Salem – Unit 1 (Unit 2) Pre-fire Plan, Fuel Handling Building Elevations: 84' 100' &
116', Revision 2
FRS-II-721, Salem – Unit 1 (Unit 2) Pre-fire Plan, Fuel Handling Building Elevations: 130',
Revision 2

Drawings

265025
264923
602057
602058

Notifications

20449156
20452221

Other Documents

S-C-M200-MSE-0383, Actuation of Fire Suppression System Causing Inoperability of Safety-
Related Equipment (IE-83-41), Revision 0

Enclosure

FRS-II-411, Salem – Unit 1, (Unit 2) Pre-fire Plan, Reactor Plant Auxiliary Equipment Area
Elevations: 45: & 55', Revision 2

FRS-II-445, Salem Unit 1, (Unit 2) Pre-fire Plan, Diesel Generator Area Elevations: 100' & 122'

Section 1R06: Flood Protection Measures

Drawings

265025

264923

602057

602058

Other Documents

NRC Information Notice No. 98-31, Fire Protection System Design Deficiencies and Common-
Mode Flooding of Emergency Core Cooling System Room at Washington Nuclear
Project Unit 2

NRC Information Notice 2005-30, Safe Shutdown Potentially Challenged by Unanalyzed
Internal Flooding Events and Inadequate Design

Section 1R11: Licensed Operator Regualification Program

Procedures

TQ-AA-301, Simulator Configuration Management, Revision 12

S2.OP-AB.SW-0001, Loss of SW Header Pressure, Revision 16

S2.OP-AB.SW-0002, Loss of SW– Turbine Header, Revision 11

S2.OP-AB.SW-0003, SW Bay Leak, Revision 7

S2.OP-AB.CN-0001, Main Feedwater/Condensate System Abnormality, Revision 24

S2.OP-SO.TRB-0001, Turbine-Generator Startup Operations, Revision 32

2-EOP-TRIP-1, Reactor Trip or Safety Injection, Revision 27

2-EOP-TRIP-2, Reactor Trip Response, Revision 27

2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink, Revision 24

2-EOP-APPX-1, Component Cooling Water Restoration, Revision 24

2-EOP-APPX-3, SI Verification, Revision 22

Other Documents

ESG-1001, Simulator Training Scenario, SWLeak – Loss of Heat Sink, Revision 0

Section 1R12: Maintenance Effectiveness

Procedures

ER-AA-310, Implementation of the Maintenance Rule, Revision 6

Notifications

20448852

20448362

20425813

20422673

20425936

20423650

Enclosure

20426225
20423763
20425383
20455376
20454948

Orders

70095498
70100648

Other Documents

Salem Maintenance Rule 2009 (a) (3) Periodic Assessment
Salem Maintenance Rule/EPIX Programs Health Reports
SC-MRULE-002, Maintenance Rule Performance Criteria Verification Following Salem R4.2
PRA Update, Revision 0

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

S1.OP-SO.CC-0002, 11 & 12 Component Cooling Heat Exchanger Operation, Revision 26

Drawings

205231-SIMP
205231

Notifications

20452876
20450474
20456318
20402011
20401268
20401226
20390128
20390057
20389937
20389805
20386747
20386346
20386073
20366148

Other Documents

Tagging Work List 4266950, 11SW127 Positioner PM's
SGS Unit 1 PRA Risk Evaluation Form for work week 004 (January 17 to 23)
SGS Unit 1 PRA Risk Evaluation Form for work week 012 (March 14 to 20)
SGS Unit 2 PRA Risk Evaluation Form for work week 012 (March 14 to 20)
SGS Unit 1 PRA Risk Evaluation Form for work week 014 (March 28 to April 3)
SGS Unit 2 PRA Risk Evaluation Form for work week 014 (March 28 to April 3)

Enclosure

Salem 2 Narrative Log, OP-SH-111-101-1001

Section 1R15: Operability Evaluations

Procedures

SC.IC-PT.NIS-0102, Intermediate Range Channels – Compensating Voltage Adjustments,
Revision 8

S2.OP-ST.AF-0009, Plant Systems – AFW, Revision 26

S2.OP-SO.CN-0002, Steam Generator Feed Pump Operation, Revision 31

MA-AA-716-004, Complex Troubleshooting, Revision 8

MA-AA-716-004, Conduct of Troubleshooting, Revision 9

OP-SH-111-101-1001, Salem 1 Narrative Log

12/13 chillers Timeline

Drawings

247404

247405

203312

203315

Notifications

20446414

20450330

20450314

20449247

20450031

20452009

20448235

20448234

20448230

20422437

20452437

20452479

20453853

20453658

20453657

20444513

Orders

30153480

60087629

60088964

70108095

70106293

70105118

70105525

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Other

LER 2009-001-00, Chillers Inoperability Exceeds TS Allowed Outage time

Section 1R19: Post-Maintenance Testing

Procedures

MA-AA-716-012, PMT, Revision 15

SH.MD-GP-0007, General Guidelines for Fuse Inspection/Replacement, Revision 3

SC.MD-PM.AF-0007, 13 and 23 AFW Terry Turbine Linkage Inspection and Lubrication,
Revision 0

S2.OP-ST.AF-0003

SC.IC-CM.ZZ-0003, Disassembly, Inspection, Reassembly and Testing of Masoneilan Air
Operated Actuators Model #33, Revision 6

SC.MD-PM.ZZ-0035, Masoneilan Minitor Butterfly Valve Internal Inspection Mark#s AA-96,
AA-104, AA105, AA-108, and KI-21, Revision 14

SC.MD-CM.ABV-0001, Auxiliary Building Supply and Exhaust Fan Repairs, Revision 9

SH.IC-GP.ZZ-0002, Disassembly, Inspection, Reassembly and Testing of Masoneilan Model
37/38 Air Operated Actuators, Revision 10

SC.IC-PM.ZZ-0008, Maintenance of Bettis Actuator (Model CB), Revision 13

S2.OP-ST.SW-0002, IST - 22 SW Pump, Revision 30

S2.RA-ST.SW-0002, IST 22 SW Pump Acceptance Criteria, Revision 11

MA-AA-723-300, Diagnostic Testing and Inspection of Motor Operated Valves, Revision 4

MA-AA-723-301, Periodic Inspection of Limitorque Model SMB/SB/SBD-000 through 5 Motor
Operated Valves, Revision 5

S1.OP-ST.CC-0004, IST Component Cooling Valves, Revision 11

Notifications

20449789

20449872

20448722

20283434

20450002

20450012

20450013

20449789

Orders

60087342

30114399

30089430

70090599

30143571

30101989

70057296

30184621

30095025

30078748

30131853

40021885

60089388

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Other Documents

Salem IST Program Basis Data Sheet for 11CC16

MOV Post-test Data Review Worksheet for 11CC16

Section 1R20: Refueling and Outage Activities

Procedures

CC-AA-5001, Post Transient or Scram Walkdown, Revision 3

S2.OP-AB.CN-0001, Main Feedwater/Condensate System Abnormality, Revision 24

S2.OP-SO.CN-0007, Prompt Recovery from SGFP Trip, Revision 3

2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink, Revision 24

Drawings

220429

247404

247405

203312

211370

220817

220818

203373

203327

247404

247402

Notifications

20453165

20448227

20448228

20448229

20448230

20448232

20448233

20448234

20448235

20448279

20448291

20449466

20455375

Orders

80100842

Other Documents

OP-SA-108-114-1001, Trip Report dated January 21, 2010

Enclosure

Section 1R22: Surveillance Testing

Procedures

S1.IC-ST.RHR-0014, RHR Interlock and Alarm Verification, Revision 9
S1.OP-ST.DG-0013, 1B Diesel Generator Endurance Run, Revision 17
S2.OP-ST.RC-0008, RCS Water Inventory Balance, Revision 32
S1.OP-ST.RC-0008, RCS Water Inventory Balance, Revision 23
S1.OP-ST.SW-0001(Q), IST -11 SW pump, Revision 31
S2.OP-TM.ZZ-0002, Tank Capacity Data, Revision 8
S2.1C-SC.RCP-0018(Q), 2PT-456 Pressurizer Pressure Protection Channel II, Revision 17
S2.OP-ST.SJ-0001(Q), IST - 21 Safety Injection Pump, Revision 19

Drawings

224389
224390
211506
211507
220075
220079
241108
205301
205330
205328
205339
205228
205223
613654

Notifications

20448722
20449060
20449789
20448722
20449872
20451813
20451809
20453701
20454451
20454760

Orders

50113107
50117613
50121777

Enclosure

Section 1EP6: Drill Evaluation

Procedures

S2.OP-AB.SW-0003, SW Bay Leak, Revision 7
2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink, Revision 24

Notifications

20452276
20454262

Other Documents

ESG-1001, Simulator Training Scenario, SW Leak – Loss of Heat Sink, Revision 0
Salem Event Classification Guides
PSEG Nuclear Salem – Drill, Scenario Synopsis

Section 2OS1: Access Control to Radiologically Significant Areas

Procedures

Radiation Work Permit 1, Task 4040 (Management Tours/Oversight)
Radiation Work Permit 1, Task 15 (Fuel Movement)
Radiation Work Permit 6, Task 628 (Reactor Head Shaving)
Radiation Work Permit 2, Task 23 (Eddy Current Testing/Tube Plugging)

Notifications

20452132
20452407
20452295
20452297
20452276

Section 2OS2: ALARA Planning and Controls

Procedures

ALARA Briefing for RWP 1, Task 15
ALARA Briefing for RWP 2, Task 23

Section 1RS5: Radiation Monitoring Instrumentation

Most Recent Calibration Results for Both Salem Units:

- Containment Air Particulate Process Radiation Monitor
- Containment Atmosphere Noble Gas Process Radiation Monitor
- Containment Fan Coil Unit Process Radiation Monitor
- Containment Fan Coil Unit Cooling Water Process Radiation Monitor
- Liquid Waste Disposal Process Radiation Monitor
- Steam Generator Blowdown Process Radiation Monitor
- Low Range Plant Vent Noble Gas Process Radiation Monitor
- Intermediate Range Noble Gas Process Radiation Monitor

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Plant Vent High Range Noble Gas Process Radiation Monitor
Plant Vent Noble Gas Background Radiation Monitor
Containment Air Process Radiation Monitor
Liquid Waste Disposal Process Radiation Monitor

Plant Vent Noble Gas Release Rate Process Radiation Monitor

Plant Vent Noble Gas Intermediate/High Range Process Radiation Monitor
Chemical Waste Basin Process Radiation Monitor

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Most Recent Calibration Results for Both Salem Units:

Plant Vent Noble Gas Sample and Process Flow Calibration
Steam Generator Blowdown Flow Instrument Loop Calibration

Radiiodine Test Reports:

Unit 1 Control Area Ventilation
Unit 2 Control Area Ventilation
Unit 1 Auxiliary Building Ventilation
Unit 2 Auxiliary Building Ventilation
Unit 1 Fuel Handling Ventilation
Unit 2 Fuel Handling Ventilation

Analytics Radiochemistry Cross Check Program Results for 2009

ODCM for PSEG Nuclear LLC Salem Generating Station, Revision 24

2008 Annual Radioactive Effluent Release Report for the Salem Generating Station

Gaseous Radioactive Waste Release Permits: 56727.273.030.G; 56771.162.665.G;
56809.251.297.G; 56810.151.278.G; 56813.151.280.G; 56814.251.299.G

Liquid Radioactive Waste Release Permits: 51413.101.167.L; 51414.202.183.L;
51421.202.185.L; 51422.102.164.L; 51466.132.033.L

Self-Assessment # 70096339, Hope Creek and Salem Generating Stations, Public Rad Safety –
RETS Self-Assessment

Section 4OA1: Performance Indicator Verification

Other Documents

Salem 1 Pls, 4Q/2009, RCS Activity
Salem 2 Pls, 4Q/2009, RCS Activity
Salem 1 Pls, 4Q/2009, RCS Leakage
Salem 2 Pls, 4Q/2009, RCS Leakage
Salem 1 Pls, 4Q/2009, Safety System Functional Failures (PWR)

Salem 2, 4Q/2009 Performance Indicators, Safety System Functional Failures (PWR)

LER 272/09-001, Chillers Inoperability Exceeds TS Allowed Outage Time

LER 311/09-002, 22 Component Cooling Heat Exchanger Inoperable for Greater than Allowed
Outage Time

NUREG-1022, Revision 2, 3.2.7 Event or Condition that Could Have Prevented Fulfillment of a
Safety Function

Enclosure

Section 4OA2: Identification and Resolution of Problems

Notifications

20449261

20451359

Section 4OA3: Event Followup

Procedures

TQ-AA-301, Simulator Configuration Management, Revision 12

S1.OP-DL.ZZ-0003, Control Room Log – Modes 1-4, Revision 62

SC.OP-AB.ZZ-0001, Adverse Environmental Conditions, Revision 12

S2.OP-AB.CW-0001, Circulating Water System Malfunction, Revision 30

Notifications

20445681

20445661

20445655

20445650

20445649

20445648

20445647

20445646

20445645

Orders

70105740

Other Documents

Comparison of Unit 2 Actual Plant Data Following the Trip to Simulator Data for a Similar Transient

OP-AA-102-104, Common Unit Standing Order SO 10-001, CW Intake Environmental Monitoring, Revision 1

SC-SW004-01, Salem Unit 1 & 2 Tide Level Uncertainty, Revision 0

Section 4OA5: Other Activities

Notifications

20450186

Other Documents

DOT Special Permit Authorization SP-14455

Salem Shipment Records: 10-10; 10-11; 10-12; 10-13

Enclosure

LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and management System
AFW	Auxiliary Feedwater
ALARA	As Low As Reasonably Achievable
CAP	Corrective Action Program
CCHX	Component Cooling Water Heat Exchanger
CFR	Code of Federal Regulation
CVCS	Chemical Volume Control System
DOT	Department of Transportation
EDGs	Emergency Diesel Generators
FSAR	Final Safety Analysis Report
GPI	Groundwater Protection Initiative
HEPA	High-efficiency Particulate Air
IMC	Inspection Manual Chapter
IST	Inservice Testing
LCO	Limiting Condition for Operation
LERs	Licensee Event Reports
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
ODCM	Off-Site Dose Calculation Manual
OOS	Out-of-Service
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PMT	Post-Maintenance Testing
PSEG	Public Service Enterprise Group Nuclear LLC
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specifications
RG	Regulatory Guide
RHR	Residual Heat Removal
SDP	Significance Determination Process
SGFP	Steam Generator Feed Pump
SSCs	Structures, Systems, and Components
SW	Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order