



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

December 23, 2013

Mr. Thomas P. Joyce
President and Chief Nuclear Officer
PSEG Nuclear LLC – N09
P. O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2
NRC EVALUATION OF CHANGES, TESTS, OR EXPERIMENTS AND
PERMANENT PLANT MODIFICATIONS TEAM INSPECTION REPORT
05000272/2013007 AND 05000311/2013007

Dear Mr. Joyce:

On November 22, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Salem Nuclear Generating Station, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on November 22, 2013, with Ken Grover, Engineering Director, 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. In conducting the inspection, the team reviewed selected procedures, calculations and records, observed activities, and interviewed station personnel.

The NRC inspectors did not identify any findings or violations of more than minor significance.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding", of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Paul G. Krohn, Chief
Engineering Branch 2
Division of Reactor Safety

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

T. Joyce

2

Enclosure:

Inspection Report 05000272/2013007 and 05000311/2013007
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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President and Chief Nuclear Officer
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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.: 05000272/2013007 and 05000311/2013007

Licensee: Public Services Electric and Gas Nuclear LLC (PSEG)

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

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

Inspection Period: November 4 through November 22, 2013

Inspectors: K. Mangan, Senior Reactor Inspector, Division of Reactor Safety (DRS)
Team Leader
J. Brand, Reactor Inspector, DRS
J. Ayala, Reactor Inspector, DRS

Approved By: Paul G. Krohn, Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000272/2013007 and 05000311/2013007; 11/4/13 - 11/22/13; Salem Nuclear Generating Station, Units 1 and 2; Engineering Specialist Plant Modifications Inspection.

This report covers a 2-week on-site inspection period of the evaluations of changes, tests, or experiments and permanent plant modifications. The inspection was conducted by three region based engineering inspectors. No findings were identified. 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.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (IP 71111.17)

.1 Evaluations of Changes, Tests, or Experiments (26 samples)

a. Inspection Scope

The team reviewed one safety evaluation to evaluate whether the changes to the facility or procedures, as described in the Updated Final Safety Analysis Report (UFSAR), had been reviewed and documented in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59 requirements. In addition, the team evaluated whether Public Services Electric and Gas (PSEG) had been required to obtain U.S. Nuclear Regulatory Commission (NRC) approval prior to implementing the change. The team interviewed plant staff and reviewed supporting information including calculations, analyses, design change documentation, procedures, the UFSAR, the Technical Specifications (TS), and plant drawings to assess the adequacy of the safety evaluation. The team compared the safety evaluation and supporting documents to the guidance and methods provided in Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Evaluations," Revision 1 as endorsed by NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," to determine the adequacy of the safety evaluation.

The team also reviewed a sample of 25 CFR 50.59 screenings for which PSEG had concluded that a safety evaluation was not required. These reviews were performed to assess whether PSEG's threshold for performing safety evaluations were consistent with 10 CFR 50.59. The sample included design changes, calculations, and procedure changes.

The team reviewed the safety evaluation and screens that PSEG had performed and approved during the time period covered by this inspection. All safety evaluations since the last modifications inspection were reviewed, and the screenings and applicability determinations selected were based on the safety significance, risk significance, and complexity of the change to the facility.

In addition, the team compared PSEG's administrative procedures used to control the screening, preparation, review, and approval of safety evaluations to the guidance in NEI 96-07 to evaluate whether the procedures adequately implemented the requirements of 10 CFR 50.59. The reviewed safety evaluations and screenings are listed in the Attachment.

b. Findings

No findings were identified.

Enclosure

.2 Permanent Plant Modifications (12 samples)

.2.1 Unit 1, 12B Component Cooling Water Heat Exchanger Controller Replacement

a. Inspection Scope

The team reviewed modification 80104844 which replaced the component cooling water (CCW) heat exchanger controller with a new controller due to obsolescence of the existing controller. The controller is designed to maintain CCW temperature by throttling service water (SW) flow through the heat exchanger. The installation of the controller was performed to increase the reliability and availability of the CCW system. In addition to the controller, a new instrument rack was installed to provide a seismic support for mounting the controller.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the CCW or SW system had been degraded by the modification. The team interviewed design engineers and reviewed the design of the new controller to determine if the change met design and licensing requirements of the two systems. Additionally, the team reviewed post-modification testing (PMT) results and associated maintenance work orders to determine if the changes were appropriately implemented. The team also performed a walk down of the mounting bracket and controller to determine if the modification was in accordance with the design and to assess the overall material conditions of the equipment following the modification work. Finally, the team reviewed affected surveillance test procedures to verify they had been appropriately updated to reflect the post-modification design and operation. The 10 CFR 50.59 screening determination associated with this modification were also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.2 Unit 2, Motor-Operated Valve Upgrades for 21CS36, 21RH19, 21BF13, 22BF13, 2SJ4, 2SJ5, 2SJ12, and 2SJ13

a. Inspection Scope

The team reviewed modification 80099679 which was performed to improve the valve design margin for the eight motor operated valves (MOV) listed above. PSEG determined that these modifications were needed to raise the calculated valve design margin for MOVs 21CS36, 21RH19, 21BF13, 22BF13, 2SJ4, 2SJ5, 2SJ12, and 2SJ13 so that PSEG would meet the requirements of GL 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." PSEG implemented one or more of the following changes to improve the design margin of the valves: switch from torque limit closure control to limit switch (position) closure control to allow for use of all

available torque during valve repositioning; power cable upsize for the operator motor in order to reduce voltage drop to the motor; and, switch from a dual packing and leak-off line configuration to a single packing ring with spacer configuration on the valve stem to reduce stem friction.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of these systems (feedwater, containment spray, residual heat removal, and safety injection) had been degraded by the modifications. The team interviewed design engineers, reviewed design drawings, and reviewed post-maintenance MOV design calculations to determine if the changes met the design and licensing requirements. Additionally, the team reviewed drawings to determine if they had been appropriately updated to reflect the post-modification design, and PMT results to determine if the changes were appropriately implemented. Finally, the team walked down the valves and associated cabling to determine if the modifications had been implemented as designed. The 10 CFR 50.59 screens and safety evaluation determination associated with this modification were also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.3 Unit 1, Service Water Diaphragm Valve Replacement

a. Inspection Scope

The team reviewed modification 80098820, which replaced 61 manual 316 stainless steel elastomer diaphragm valves in the service water system with AL6XN ball valves. The valves were placed to improve corrosion resistance of the valves in the SW system. The modification was performed in order to increase the reliability of the valves and to eliminate the housekeeping issues associated with leakage and corrosion of the diaphragm valves.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the SW system had been degraded by the modifications. The team interviewed design engineers and reviewed the replacement valve design to determine if the changes were consistent with the design and licensing requirements. Additionally, the team reviewed PMT results, and associated maintenance work orders to determine if the changes were appropriately implemented and tested in accordance with American Society of Mechanical Engineers (ASME) Code requirements. The team also performed a walk down of several valves and the SW system to assess the overall material conditions of the valves following the modification work. Finally, the team reviewed vendor test reports to determine if the valves would withstand worst case design requirements including seismic loading and radiation exposure. The 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.4 Unit 1, Service Water Strainer Logic Modifications

a. Inspection Scope

The team reviewed modification 80106058 which installed a selector switch for the SW strainer logic controls for Unit 1. The SW system is designed to provide an adequate supply of cooling water to the reactor safeguard and auxiliary equipment and the SW strainers filter raw river water to minimize possible blockage of safety-related heat exchangers cooled by SW. The selector switch modification was performed to allow the SW strainers to be placed in a bypass mode. This mode would put the strainer in continuous backwash operation during high grassing/debris season prior to reaching a high differential pressure setpoint in order to minimize the possibility of strainer blockage.

The team reviewed the modification to verify that the design basis, licensing basis, and performance capability of the service water strainer, SW system, and supported safety-related components had not been degraded by the modification. The team interviewed plant engineers and reviewed the logic design to determine if the changes met design and licensing requirements. Additionally, the team reviewed evaluations and the PMT results to evaluate if PSEG had properly implemented the modification. The team also reviewed notifications to evaluate whether the new SW strainer logic performed reliably since installation and to evaluate whether any new performance issues had been caused by the modification. Additionally, the team walked down the SW strainer control panel and the SW pumps to assess the material condition of the equipment and verify the standby configuration. The 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.5 Unit 1, Replacement of Obsolete Spent Fuel Pit Pump Control Power Breaker

a. Inspection Scope

The team reviewed modification 80109469 which replaced an obsolete breaker associated with the Unit 1 spent fuel pit pump control power. The breaker is designed to provide overcurrent and short circuit protection for the 11 spent fuel pit pump control power.

The team reviewed the modification to verify the design basis, licensing basis, and performance capability of the spent fuel pit pump or electrical distribution system had not been degraded by the modification. The team verified that the design specifications of the replacement breaker were equivalent to the original equipment. The team interviewed plant engineers, reviewed electrical breaker design calculations, coordination studies, and the PMT results to evaluate whether PSEG had properly implemented the replacement breaker modification. The team also reviewed notifications to evaluate whether the new breaker performed reliably since installation and whether any new performance issues had resulted from the modification. Additionally, the team walked down the replacement breaker motor control center and the associated 11 spent fuel pit pump to assess its material condition and verify the standby configuration. The 10 CFR 50.59 screening determination associated with this modification were also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.6 Unit 2, 23 Emergency Diesel Generator Control Area Supply Fan Motor Circuit Breaker Trip Setting Change

a. Inspection Scope

The team reviewed modification 80103269 which increased the breaker trip setpoint for the 2C emergency diesel generator (EDG) control room ventilation fan. The control room ventilation fan provides air flow through each diesel generator control area to maintain the room temperatures within a suitable range in order to assure reliable operation of the electrical equipment located in the control room space. The EDG control room fan had tripped open on several occasions in the past. PSEG determined the breaker tripped due to the high inrush currents and breaker trip setpoint drift. The setpoint change was performed to provide margin between the breaker trip setpoint and fan motor starting current. PSEG also performed a “for like” replacement of the 2C ventilation fan.

The team reviewed the modification to verify that the design basis, licensing basis, and performance capability of the EDG control room ventilation fan breaker, fan, and supported safety-related components had not been degraded by the modification. The team verified that the fan breaker setpoint change met the guidance provided in the National Electric Code Section 430. The team interviewed plant engineers, reviewed electrical breaker design calculations and coordination studies, evaluations, system health reports, and the PMT results to evaluate whether PSEG had properly implemented the breaker setpoint modification. The team also reviewed notifications to evaluate whether the EDG control room fan breaker performed reliably or experienced any failures after the setpoint and fan motor change. The 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in Section 1R17.1 of this report. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.7 Units 1 and 2, Thermal Overload and Circuit Breaker Change for Safety-Related Motor Operated Valve at Degraded Grid Voltage (2 Samples)

a. Inspection Scope

The team reviewed modifications 80100068 (Unit 1) and 80099032 (Unit 2) which replaced thermal overloads (TOL) and circuit breakers for several MOV motors. The breakers provide protection for MOV motor cables during overcurrent conditions and the TOLs provide protection for the valve motor during motor overload conditions. The modifications were made as a result of design vulnerabilities during degraded grid conditions identified during an NRC inspection. Specifically, during low voltage conditions the MOV TOLs would heat up and actuate the TOL relay preventing the MOVs from repositioning, as required, to perform their design function.

The team reviewed the modification to verify that the design basis, licensing basis, and performance capability of the TOLs, breakers, MOVs, and supported safety-related components had not been degraded by the modification. The team verified that the design specifications of the TOLs met the design requirements for a degraded grid voltage condition. The team interviewed plant engineers, reviewed electrical design calculations changes and coordination studies, and a sample of PMT results to evaluate whether PSEG had properly implemented the TOL modification. The team also reviewed notifications to evaluate whether the replacement TOLs performed reliably. The 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.8 Unit 2, Replacement of No. 21 and No. 22 Charging Safety Injection Pumps Casing, Internal Element, and Mechanical Seal

a. Inspection Scope

The team reviewed modification 80102631 which replaced the No. 21 and No. 22 charging safety injection pumps' carbon steel casing, internal element, impeller, and mechanical seal. The modification was performed to address degradation of the pump casing's stainless steel cladding that had previously required weld repair. The replacement pump assemblies were constructed with a stainless steel casing similar to the pumps casings installed in the Salem Unit 1 charging pumps. Additionally, due to leakage of the cooling water connections at the mechanical seal interface, PSEG replaced the existing water cooled mechanical seal with a new generation mechanical seal that does not require an external source of water for cooling.

The team reviewed the modification to determine if the design, licensing bases, and performance capability of the charging pumps had been degraded by the modification. The team reviewed PMT results, pump testing records, and associated maintenance work orders to determine if the changes were appropriately implemented. Additionally, the team reviewed affected surveillance test procedures to determine if they had been appropriately updated to reflect the post-modification design and operation. A review of corrective action program notifications was performed to evaluate whether there were any reliability or performance issues associated with the pump following the modification. Finally, the team interviewed design engineers and performed a walkdown of the charging pumps and associated components to assess the overall material conditions of the pump following the modification and to determine if the changes met design and licensing requirements. The 10 CFR 50.59 screening determination associated with this modification was reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.9 Unit 1, Auxiliary Building External Flood Seals

a. Inspection Scope

The team reviewed modification 80017999 which installed six new internal conduit seals in the Salem Unit 1 auxiliary building. The Salem auxiliary building is a safety-related structure required to withstand the effects of a design basis flood event. The seals are designed to provide external flood control for the building. PSEG performed the modification to correct in-leakage identified through a below-grade electrical flex conduit.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the auxiliary building had been degraded by the installation of the new seals. The team interviewed design engineers and reviewed the seal design to determine if the changes met design and licensing requirements and to determine if the changes were appropriately implemented. The seals are installed inside a large electrical junction box so the team did not perform a visual inspection of the new seals; however, the team performed a walk down of the auxiliary building and inspected the outside of the electrical junction box to determine if water in-leakage had occurred following installation of the modification. The 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.10 Unit 2, Repair/Replace Critical Socket Welds in High Head Safety Injection Piping

a. Inspection Scope

The team reviewed modification 80106030 which repaired and/or replaced several socket welds in the high head safety injection piping. The socket welds were modified to correct socket weld cracks identified by PSEG during monthly surveillance testing of the emergency core cooling system on July 14, 2011. PSEG identified a leak of approximately 0.5 gallons per minute from a socket weld crack within the boron injection tank (BIT) portion of the high head safety injection system following the testing. The cause of the socket weld crack was attributed to defective welding and increased pipe vibration caused by the chatter of the BIT relief valve. In addition to the weld repairs, the setpoint for the relief valve was raised under modification 80106029.

The team reviewed both modifications 80106030 and 80106029 to determine if the design basis, licensing basis, or performance capability of the high head safety injection system had been degraded by the modifications. The team interviewed design engineers and reviewed related industry and Salem operational experience regarding socket weld failures to determine if the changes were adequate to restore the design and licensing requirements of the system. Additionally, the team reviewed PMT results and associated maintenance work orders to determine if the changes were appropriately implemented. The team also performed a walk down of the applicable portions of the high head safety injection (SI) system, relief valves, and modified socket welds to determine if the modifications were completed in accordance with the design and to assess the overall material conditions of the system piping. Finally, the team reviewed affected relief valve surveillance test procedures to evaluate whether they had been appropriately updated to reflect the post-modification design and operation. The 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in Section 1R17.1 of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.11 Unit 2, 21 Safety Injection Pump Motor Replacement

a. Inspection Scope

The team reviewed Equivalent Change 80107692 which replaced the 21 SI pump motor. The motor was replaced following a failure of the motor on November 5, 2012. PSEG determined the failure was due to high motor vibrations and a cracked stator bar. The new motor was built to match the original motor and is dimensionally similar; however, PSEG determined that the new motor had some different physical and operational characteristics compared to the original motor. Specifically, the new motor weighed approximately 370 lbs. more than the original motor and had a higher rated speed.

PSEG evaluated these differences under Equivalent Replacement Evaluation T1EO0265001 and Engineering Evaluation S-1-SJ-MEE-1287. The team reviewed the equivalent change, equivalency replacement evaluation, and engineering evaluation to determine if the design basis, licensing basis, or performance capability of the 21 SI pump and motor or other safety-related components had been degraded by the modification. The team interviewed design engineers and reviewed the new motor vendor documents to determine if the changes met design and licensing requirements. Additionally, the team reviewed PMT results and associated maintenance work orders to determine if the changes were appropriately implemented. The team also performed a walk down of the accessible portions of the SI system and reviewed the vendor inspection report to determine if the modification was performed in accordance with the modification package and to assess the overall material conditions of the motors. Finally, the team reviewed affected surveillance test procedures to determine if they had been appropriately updated to reflect the post-modification design and operation. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The team reviewed a sample of notifications associated with 10 CFR 50.59 and plant modification issues to evaluate whether PSEG was appropriately identifying, characterizing, and correcting problems associated with these areas, and whether the planned or completed corrective actions were appropriate. In addition, the team reviewed notifications written on issues identified during the inspection to verify PSEG adequately described the problem and incorporation of the issue into their corrective action system. The notifications reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

The team presented the inspection results to Mr. Ken Grover, Engineering Director, and other members of PSEG's staff at an exit meeting on November 22, 2013. The team returned the proprietary information reviewed during the inspection and verified that this report does not contain proprietary information.

ATTACHMENT
SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

K. Grover	Engineering Director
M. Adair	Fire Protection Program Engineer
M. Richers	Design Engineer
A. Johnson	Design Manager
L. Chen	Systems Engineer
F. Hummel	Inservice Testing Program Manager
B. Ketterer	Systems Engineer
R. Down	Design Engineer
K. Mathur	Design Engineer
A. Mohahhad	Senior Design Engineer
R. Montgomery	Principal Programs Engineering
G. Morrison	Design Engineer
J. Stead	Plant Engineer
D. Lafleur	Regulatory Assurance

LIST OF DOCUMENTS REVIEWED

10 CFR 50.59 Evaluations

S2011-216, Salem Dose Calculation Updates for Increased Control Room Envelope
Unfiltered In-Leakage, Revision 0

10 CFR 50.59 Screened-out Evaluations

S2010-019, UFSAR Changes to Support Secondary Source Elimination for Salem Units 1 and 2,
Revision 0
S2010-037, Unit 2 NIS Power Range Negative Flux Rate Trip Elimination, Revision 0
S2010-046, Salem 1 Cycle 21 Core Reload Design, Revision 0
S2010-200, Non-Conformance-Non-Safety-Related Breaker Installed in Safety-Related Location,
Revision 0
S2011-025, Salem Units 1 and 2, No. 21 and 22 Centrifugal Charging Pump Casing,
Internal Element and Mechanical Seal Replacement, Revision 0
S2011-051, Salem UFSAR Change Notice SCN 11-003, Revision 0
S2011-094, Evaluate Existing Unit 2 AFW Buried Pipe Coating Excavated in 2R18, Revision 0
S2011-109, Modify Protective Relay Setting for 4.16KV Switchgear Cubicle 2E3D, Revision 0
S2011-165, Refueling Operations-Containment Closure, Revision 0
S2011-231, Accumulator Operations, Revision 0
S2012-042, Switch Gear and Penetration Areas Ventilation Operation, Revision 0
S2012-070, Electrical Power Systems AC Sources Alignment, Revision 13/11
S2012-170, Salem 2 Cycle 20 Core Reload Design/FCP 80103948, Revision 0
S2012-173, TCCP 2ST12-009, S2 SSPS Train "B" Universal Logic Card (ULC) A206 TP4
Remote Test Point, Revision 0

Enclosure

S2012-209, No. 23 AF Pump Over-speed Trip Test Using ILD TTOD, Revision 0
S2013-024, Steam Line Isolation and Response Time Testing, Revision 0
S2013-025, Flux Map Processing and BEACON Calibration, Revision 0
S2013-046, Increase Salem U1 1 Full Power Average Temperature by 2.0 degrees F, Revision 0
S2013-091, Salem Unit 1 12A Component Cooling Heat Exchanger Controller Replacement, Revision 0

Modification Packages

80073267, Salem Unit 1 Groundwater Remediation System, Revision 6
80098820, Unit 1 Service Water Diaphragm Valve Replacement, Revision 1
80099032, Salem Unit 2 Thermal Overload (TOL) and Circuit Breaker Change for Safety-Related MOV at Degraded Grid Voltage, Revision 2
80099679, 2R18 MOV Upgrades for 21CS36, 21RH19, 21BF13, 22BF13, 2SJ4, 2SJ5, 2SJ12, and 2SJ13, Revision 1
80100068, Thermal Overload and Breaker Replacement for GL 89-10 MOVs, Revision 1
80103269, 23 EDG Control Area Supply Fan Motor Circuit Breaker Trip Setting Change, Revision 0
80104844, Salem Unit 1 12B CCHX Component Cooling Heat Exchanger (CCCHX) Controller Replacement, Revision 0
80106029, Increase the S2SJ-2SJ10 BIT Discharge Relief Valve Set Pressure to 2825 PSIG, Revision 1
80106030, DCP to Repair/Replace Critical Socket Welds in Unit 2 High Head Safety Injection Piping, Revision 0
80106058, Service Water Strainer Logic Modification, Revision 0
80106786, Unit 1, Revise T Average for Cycle 23, Revision 0
80109469, Replacement of Obsolete ITE Bkr EF2B015 with C&H FD2015L for S1125-1CX1AX5X#, Revision 0
T1EO0265001, No. 12 Safety Injection Pump Motor Replacement, Equivalent Replacement Configuration Change Package, Revision 0

Calculations, Analysis, and Evaluations

32-9130263, Salem Unit 1 – Fluence and Thermal-Hydraulic Evaluations for RCCA Lifetime Extension, Revision 0
5672103, Chemical Volume Control Piping Stress Calculation, Revision 1
5672106, Chemical Volume Control Piping Stress Calculation, Revision 13A
650-0608-003, Load Verification-Auxiliary Building, Revision 1
6S1-2332, Design of ACS No. 12 CCHX Panel 204-1A in Aux. Building, Revision 0
70067598, Technical Evaluation, FD2015 Breaker Testing Concerns, dated 3/28/2007
70114827, Technical Evaluation, Interim Use-As-Is for Breaker S2230-2AY3EP5E, dated 10/13/2010
70115159, Evaluation for Excessive Unfiltered In-leakage into the Control Room Envelope, dated 10/18/10
70151119, Technical Evaluation for Spare SJ Motor Rotor Bar Cracked, Revision 10

Areva NP Inc, Document No. 51-9167141-001, Laboratory Analysis of a Leaking Socket Weld at Salem Unit 2, dated 10/7/11

DE-SP.ZZ-0002 (Q), Pressure Test of Silicone Foam with and without Silicone Caulk in a 6-Inch Diameter Rigid Steel Conduit with Cable Penetrants, Concrevice Liquid in a 4-Inch Diameter Rigid Steel Conduit with Cable Penetrants, Silicone Foam in a 12 -Inch Diameter Opening with a Pipe Penetrant, and Arlon Utility Blue Black Fabric over a 12-Inch Diameter Opening with a Pipe Penetrant, dated 12/15/93

DE-SP.ZZ-0003 (Q), Pressure Test of Concrevice in a 4-Inch and 6-Inch Rigid Steel Conduit Eye Fitting with Cable Penetrants, and Silicone Caulk in a 4 Inch Diameter Rigid Steel Conduit with Cable Penetrants, dated 2/17/95

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ES-13.005, Unit 2 Electrical Penetration Overcurrent Protection, Revision 9H

ES-13.006, Breaker and Relay Coord. Calc. Safety-Related AC Sys'ts., Revisions 3O and 3T

ES-18.006, Selection of TOL Heater Elements Unit 1 & 2 Safety-Related MOV, Revision 2K

NF-AP-541, Flux Map Processing and Beacon Calibration, Revision 8

NF-S12-101, Salem 2 Cycle 20 Assessment, Revision 0

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Root Cause Investigation 70126271, Salem Unit 2, BIT Piping Weld Failure, Revision 0

S-1-SJ-MEE-1287, Evaluation of Motor Replacement for Salem Unit 1, #12 Safety Injection Pump Motor, Revision 1

S-2-AUX-MDC-1627, Pipe Break Pressures in Auxiliary Building Rooms, Revision 0

S-2-AUX-MDC-2287, Computation for Assessment of Environmental Effects for Mechanical Penetration Area HELB and Electrical Penetration Area, Revision 0

S-C-FP-FEE-1981, Penetration Seal Detail 604680 (DC 995 Caulk) Pressure Evaluation, Revision 0

SC-MS002-01, Turbine Inlet Pressure Scaling/Uncertainty Calculation, Revisions 13 and 13A

S-C-SW-MDC-1967, Service Water System Thermal Hydraulic Model, Revision 7

S-C-VAR-EEE-1057, Tabulation of Molded Case Circuit Breakers and Parameters, Revisions 2L, 3R, and 3S

S-C-ZZ-MDC-1947, Post-LOCA Vital Access Area Mission Doses –ACT, Revision 1

VTD 324254 (07), Safety Injection Pump Seismic Qualification, dated 6/21/00

Condition Reports (Notifications)

20494082	20570581	20606944	20624985
20497060	20582389	20612470	20626283
20497062	20606700	20618127	20629243*
20524919	20606878	20624028	20629861
20630555	20631138*	20631355*	
20631060*	20631231	20631356*	

*(denotes NRC identified during this inspection)

Drawings

203007A8789, No. 1 Unit 125 VDC One Line, Revision 30
203889B9786, No. 1 Unit – Service Water Intake 1B & 1C 230V Vital Buses Nos. 11, 12, and 13
Service Water Pump Strainers, Revision 17
204804A8752, Auxiliary Building Reactor Containment & Fuel Handling Area, Revision 9
205242A8761, Sht. 3, No. 1 Unit Service Water Nuclear Area, Revision 95
205321A8762, Shts. 3-3 and 3-4, Diesel Generator Rooms Ventilation, Revisions 13 and 13
205328A8763, Shts. 1, 2 and 3, Chemical & Volume Control Operation P&ID, Revisions 56, 68,
and 40
205328-SIMP-02, Chemical & Volume Control Simplified P&ID, Revision 2
205332-SIMP-02, Sht. 1, Residual Heat Removal Simplified P&ID, Revision 2
205334A8763, Sht. 1, 2, 3 and 4, Safety Injection P&ID, Revisions 60, 53, 58, and 46
205334-SIMP-01, Sht. 1, Safety Injection Simplified P&ID, Revision 2
211346-B, No. 1 & 2 Units 460 & 230V Auxiliaries I.T.E. Type K1600 Elec. Oper A.C.B.'s,
Revision 12
220837A8961, No. 1 Unit Aux. Bldg. Control Area No. 1C-125 VDC Bus, Revision 14
222484A1779, No. 2 Unit – Penetration Area 2B East Valves & Misc. 230V Vital Contr. Ctr.
One-Line, Revision 41
222505A1778, No. 2 Unit – Penetration Area 2A East Valves & Misc. 230V Vital Contr. Ctr.
One-Line, Revision 26
222507A1779, No. 2 Unit – Penetration Area 2C East Valves & Misc. 230V Vital Contr. Ctr.
One-Line, Revision 27
222786A9787, No. 2 Unit 4160V Group Buses Circ Water Buses and Transformers Tap Setting,
Revision 23
265234B0795, No. 2 Unit 2E 4160V Group Bus Spare Bkr. Cubicle 2E3D, Revision 0
601701S1000, 500, 13.8 and 4 KV Elementary One Line, Revision 35
203062A8789, No. 2 Unit 4160 V Group Buses One Line Diagram, Revision 28

Licensing Documents

LER 311/2011-005, Salem Unit 2, Completion of a Plant Shutdown in Accordance with
Technical Specification 3.03, dated 9/12/11
LR-N06-0035, Request for Change to Technical Specifications Elimination of Power Range,
Neutron Flux, High Negative Rate Trip and Correction Errors
Ltr. from PSEG to USNRC, Request for Change to Technical Specifications Beacon Changes
Salem Generating Station Facility Operating Licenses DPR-70 and DPR-75, dated 6/14/00
Ltr. from PSEG to USNRC, Supplemental Information for a Requested Change to the Technical
Specifications - Beacon Changes Salem Generating Station Facility Operating Licenses
DPR 70 and DPR-75, dated 10/12/00
Safety Evaluation Report by the Directorate of Licensing US Atomic Energy, Salem Nuclear
Generating Station Units 1 and 2, Salem County, New Jersey, dated 10/11/74
Salem Generating Station Unit Nos. 1 and 2, Updated Final Safety Analysis Report, Revision 26
Salem Generating Station Unit Nos. 1 and 2, Technical Specifications, through Amendment 304
and 286
Supplemental LER 311/2011-005-01, Salem Unit 2, Completion of a Plant Shutdown in
Accordance with Technical Specification 3.03, dated 11/9/11

Miscellaneous

#11 Safety Injection Pump, Test Performance Curve No. 34554-Spare Element, dated 10/25/83
#12 Safety Injection Pump, Test Perf. Curve No. 34554E, Pump No. 45493, dated 2/16/70
#21 Safety Injection Pump, Test Perf. Curve No. 34554G, Pump No. 45495, dated 2/17/70
#21 Safety Injection Pump, Test Perf. Curve No. 34617-M, Pump No. 45613, dated 12/4/70
#22 Safety Injection Pump, Test Perf. Curve No. 34554H, Pump No. 45496, dated 4/16/70
#22 Safety Injection Pump, Test Perf. Curve No. 34617-N, Pump No. 45614, dated 12/8/70
51-9130018-000, Salem Unit 1 Steam Generator Secondary Side Deposit Management Program, Revision 0
ER-SA-310-1009, Salem Generating Station-Maintenance Rule Scoping, Revision 3
ES-13.006, Breaker & Relay Coordination Calculation Safety-Related AC System, Revision 0
ES-15.017, Salem Unit 1 and 2, Analytical Voltage Analysis, Revision 0
Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance
National Electric Code, Article 430, Motors, Motor Circuits, and Controllers, 2011 Edition
NUREG-0800, Standard Review Plan, 9.1.3 Spent Fuel Pool Cooling and Cleanup System, Revision 1
Purchase Order 4500526499, 78-6208 and Valve Data Sheet for AA-338, dated 5/28/02
Purchase Order 4500530927, 78-6208 and Valve Data Sheet for AA-339, dated 7/24/03
Regulatory Guide 1.106, Thermal Overload Protection for Electric Motors on Motor-Operated Valves, Revision 2
Regulatory Guide 1.13, Spent Fuel Storage Facility Design Basis, Revision 1
Regulatory Guide 1.196, Control Room Habitability at Light-Water Nuclear Power Reactors,
Regulatory Guide 1.218, Condition-Monitoring Techniques for Electric Cables Used in Nuclear Power Plants, dated April 2012
Regulatory Guide 8.8, Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable, Revision 3
S2CVC-2CVC20, No. 21 Centrifugal Charging Pump (CCP) Performance Data, dated 8/28/12
S2CVC-2CVC21, No. 22 Centrifugal Charging Pump (CCP) Performance Data, dated 5/17/11
System Health Report, 230 VAC, Units 1 and 2, Q4-2013
System Health Report, Chemical & Volume Control, Units 1 and 2, Q3-2013
System Health Report, Safety Injection, Units 1 and 2, Q3-2013

Procedures

BUPG-2, BEACON Power Distribution Measurement Processing and Calibration, Revision 0
S1.OP-PM.CC-0012, 12 Component Cooling Heat Exchanger High Flow Flush and Alignment, Revision 21
S1.OP-SO.SJ-0002, Accumulator Operations, Revision 20
S1.OP-ST.500-001, Electrical Power Systems AC Sources Alignment, Revision 13
S1.OP-ST.CAN-0007, Refueling Operations – Containment Closure, Revision 24
S1.OP-ST.MS-0002, Main Steam and Main Feedwater Valves, Inservice Testing, Revision 14
S1.OP-ST.MS-0003, Steam Line Isolation and Response Time Testing, Revision 10

S2.FP-SV.FBR-0056, Fire and HELBA/MELBA Barrier Inspection, Revision 5
 S2.OP-ST.SJ-0003, Inservice Testing Safety Injection Valves Modes 1-6, Revision 12
 S2.OP-ST.SW-0007, Inservice Testing Service Water Valves Modes 1-4, Revision 10
 S2.RA-ST.CVC-0003, Inservice Testing 21 Charging Pump Acceptance Criteria, Revision 14
 SC.MD-PM.ZZ-0005, Molded Case Circuit Breaker Maintenance, Revision 10
 SC.RA-AP.ZZ-0051, Leakage Monitoring and Reduction Program, Revision 3
 SC.RA-ST.CAV-0001, Control Room Envelope Pressure Test, Revision 1
 SH.MD-GP.ZZ-0022, Bolt Torquing and Bolting Sequence Guidelines, Revision 5

Surveillance and Modification Acceptance Tests

S1.OP-ST.MS-0003(Q), Steam Line Isolation and Response Time Testing, performed 5/23/13
 S2.OP-PT.AF-0007, No. 23 AF Pump Overspeed Trip Test Using ILD TTOD, performed 11/8/12
 and 11/16/12
 S2.OP-PT.CVC-0002(Q), Charging Pump Flow Test, Modes 5-6, performed 11/7/12
 S2.OP-ST.CVC-0004(Q), Inservice Testing-22 Charging Pump, performed 12/18/12
 S2.OP-ST.CVC-0004(Q), Inservice Testing-22 Charging Pump, performed 3/18/13
 S2.OP-ST.CVC-0004(Q), Inservice Testing-22 Charging Pump, performed 6/11/13
 S2.OP-ST.CVC-0004(Q), Inservice Testing-22 Charging Pump, performed 9/16/13
 S2.OP-ST.SJ-0001(Q), Inservice Testing-21 Safety Injection Pump, performed 11/13/12

Vendor Manuals

902383, Model 43AP Pneumatic Controller, Style B, dated January 1980
 325828, Foxboro Pneumatic Indicating Controller, P/N: 43AP-PA42C-P/PC

Work Orders

30144485	50121545	60083822	70114927
30144491	60081244	60084161	70118887
30144492	60081293	60088135	70119544
30144948	60081528	60094492	70141904
30155010	60081693	60099936	70155668
30231577	60083749	60106757	
30231578	60083768	60110401	

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
BIT	Boron Injection Tank
CCW	Component Cooling Water
CFR	Code of Federal Regulations
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
MOV	Motor Operated Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PMT	Post Modification Test
PSEG	Public Services Electric and Gas
SI	Safety Injection
SW	Service Water
TOL	Thermal Overload
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report