UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

August 27, 2014

Mr. Thomas 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 COMPONENT DESIGN BASES INSPECTION REPORT 05000272/2014007 and 05000311/2014007

Dear Mr. Joyce:

On July 24, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Salem Nuclear Generating Station, Unit Nos. 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on July 24, 2014, with Mr. Lawrence Wagner, Salem Plant Manager, 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 examined the adequacy of selected components to mitigate postulated transients, initiating events, and design basis accidents. The inspection involved field walkdowns, examination of selected procedures, calculations and records, and interviews with station personnel.

This report documents one NRC-identified finding that was of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance of the violation and because it was entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent with Section 2.3.2 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Senior Resident Inspector at the Salem Nuclear Generating Station. In addition, if you disagree with the cross-cutting aspect assigned to the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis of your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at the Salem Nuclear Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for the public inspection in the NRC Public Docket Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Christopher G. Cahill, Acting Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: Inspection Report 05000272/2014007 and 05000311/2014007 w/Attachment: Supplemental Information

cc: via ListServ

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cc: via ListServ

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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:	05000272/2014007 and 05000311/2014007
Licensee:	PSEG Nuclear LLC (PSEG)
Facility:	Salem Nuclear Generating Station, Unit Nos. 1 and 2
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Inspection Period:	June 23 - July 24, 2014
Inspectors:	J. Schoppy, Senior Reactor Inspector, Division of Reactor Safety (DRS), Team Leader F. Arner, Senior Reactor Inspector, DRS S. Galbreath, Reactor Inspector, DRS H. Gillis, Summer Co-Op, DRS (Observer) E. Miller, Resident Inspector, DRP G. Gardner, Mechanical Contractor P. Wagner, Electrical Contractor
Approved By:	Christopher G. Cahill, Acting Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000272/2014007 and 05000311/2014007; 06/23/2014 - 07/24/2014; Salem Unit Nos. 1 and 2; Component Design Bases Inspection.

The report covers the Component Design Bases Inspection conducted by a team of four U.S. Nuclear Regulatory Commission (NRC) inspectors and two NRC contractors. One finding of very low risk significance (Green) was identified, which was also considered to be a non-cited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within the Cross-Cutting Areas." The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green: The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not promptly identify and correct conditions adverse to quality. Specifically, PSEG did not promptly identify and correct degraded conditions associated with the Unit 1 and Unit 2 auxiliary feedwater storage tank (AFWST) and refueling water storage tank (RWST) instrumentation panels. PSEG entered the associated issues into their corrective action program (CAP) as notifications 20654991, 20654996, 20656136, 20657114, 20657115, and 20657117. PSEG's short-term corrective actions included installing bolts/plugs on the Unit 1 RWST panel 378-1 and unplugging the failed fan in Unit 1 AFWST panel 802-1.

  The team determined that the inadequate identification and resolution of the conditions adverse to quality is a performance deficiency that was within PSEG's ability to foresee and correct. The finding is associated with the Mitigating Systems cornerstone and is more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, if left uncorrected, the continued exposure to external environmental elements and/or existing internal degraded conditions could potentially result in loss of level indication, non-conservative level indication, and/or loss of low level alarm functions. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the team determined that the finding is of very low safety significance (Green), because the finding was a deficiency affecting the design or qualification of a mitigating system, structure, or component (SSC), where the SSC maintained its operability.

  The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not identify issues completely, accurately, and in a timely manner in accordance with the corrective action program. Specifically, PSEG did not identify degraded conditions associated with the Unit 1 and Unit 2 AFWST and RWST panels and take timely and appropriate corrective actions [P.1]. (Section 1R21.2.1.7)

Other Findings

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R21 Component Design Bases Inspection (IP 71111.21)

.1 Inspection Sample Selection Process

The team selected risk significant components for review using information contained in the Salem Probabilistic Safety Assessment (PSA) model and the U. S. Nuclear Regulatory Commission's Standardized Plant Analysis Risk (SPAR) model for the Salem Nuclear Generating Station. Additionally, the team referenced the Plant Risk Information e-Book (PRIB) for the Salem Nuclear Generating Station in the selection of potential components for review. In general, the selection process focused on components that had a risk achievement worth (RAW) factor greater than 1.3 or a risk reduction worth (RRW) factor greater than 1.005. The components selected were associated with both safety-related and non-safety related systems, and included a variety of components such as pumps, breakers, protection logic, electrical buses, instrumentation, batteries, motors, tanks, heat exchangers, and valves.

The team initially compiled a list of components based on the risk factors previously mentioned. Additionally, the team reviewed the previous component design bases inspection (CDBI) reports (05000272 & 311/2011007, 05000272 & 311/2008007, and 05000272 & 311/2006006) and excluded the majority of those components previously inspected. The team then performed a margin assessment to narrow the focus of the inspection to 16 components and 4 operating experience (OE) items. The team selected Unit 1 feedwater penetration seals and an Unit 2 containment pressure vacuum relief valve for large early release frequency (LERF) implications. The team's evaluation of possible low design margin included consideration of original design issues, margin reductions due to modifications, or margin reductions identified as a result of material condition/equipment reliability issues. The assessment also included items such as failed performance test results, corrective action history, repeated maintenance, Maintenance Rule (a)(1) status, operability reviews for degraded conditions, NRC resident inspector insights, system health reports, and industry OE. Finally, consideration was also given to the uniqueness and complexity of the design and the available defense-in-depth margins.

The inspection performed by the team was conducted as outlined in NRC Inspection Procedure (IP) 71111.21. This inspection effort included walkdowns of selected components; interviews with operators, system engineers, and design engineers; and reviews of associated design documents and calculations to assess the adequacy of the components to meet design basis, licensing basis, and risk-informed beyond design basis requirements. Summaries of the reviews performed for each component and OE sample, and the specific inspection findings identified are discussed in the subsequent sections of this report. Documents reviewed for this inspection are listed in the Attachment.

.2 Results of Detailed Reviews

.2.1 Detailed Component Reviews (16 samples)

.2.1.1 Unit 1 B Reactor Trip Breaker

a. The team inspected the Unit 1 B reactor trip breaker (RTB) to verify that it was capable of meeting its design basis requirements. The installed RTBs are designed to open during accident and/or transient conditions thereby removing power from the control rod drive mechanisms to automatically shut down the reactor. Since PSEG rotated other trip breakers, including the reactor trip bypass breakers, into service when they removed the B RTB for testing and maintenance, the team inspected more than one specific RTB. The team reviewed the vendor technical manual and equipment data to verify that PSEG incorporated the requirements and recommendations into testing and maintenance procedures. The team reviewed results of testing and preventive maintenance (PM) activities to confirm that PSEG adequately verified design requirements and implemented component replacements in accordance with the manufacturer's recommendations. The team also reviewed corrective action notifications (NOTFs) and system health reports to confirm that PSEG appropriately identified and resolved any observed deficiencies or adverse trends. The team performed several walkdowns of the Unit 1 trip and bypass breakers, including the associated control room instrumentation, to assess the material condition, operating environment, and configuration control.

b. Findings

No findings were identified.

.2.1.2 1C 230 Vac Bus

a. Inspection Scope

The team inspected the 1C 230 Vac bus to verify that it was capable of performing its design function. The team reviewed the one-line diagrams, control schematics, and the design basis as defined in the Updated Final Safety Analysis Report (UFSAR) to verify the adequacy of the 230 Vac bus' capability to supply adequate voltage and current to its safety-related loads. The team reviewed the associated voltage drop calculations to verify that adequate voltage was available to components supplied by the bus under worst case loading and degraded voltage conditions. The team reviewed the bus supply and feeder breaker ratings and trip settings to verify that protection coordination was provided for the loads and for the feeder conductors. The team reviewed vendor specifications, nameplate data, and calculations related to the 230 Vac bus supply to ensure that PSEG operated and maintained the 1C 230 Vac in accordance with design requirements and specifications. The team performed several walkdowns of the bus, its associated transformer, and adjacent areas to assess the installed configuration, material condition, the operating environment, and potential vulnerability to hazards.

The team also reviewed associated corrective action NOTFs and system health reports to confirm that PSEG appropriately identified and resolved any observed deficiencies or adverse trends.

b. Findings

No findings were identified.

.2.1.3 Unit 2 Safety Injection Valve 2SJ13

a. Inspection Scope

The team inspected Unit 2 safety injection (SI) system valve 2SJ13 to verify its capability to perform its design basis function. The 2SJ13 valve is one of two parallel, normally closed, motor-operated valves (MOVs) in the flow path from the high pressure injection pumps (high head charging pumps) to the reactor cold legs. The 2SJ13 valve's safety function is to open automatically on SI initiation. The team reviewed the UFSAR, Technical Specifications (TSs), drawings, and procedures to identify the design basis requirements for the valve. The team verified that PSEG tested 2SJ13 in accordance with the TS requirements and that the surveillance test (ST) records verified proper performance of 2SJ13. The team reviewed PSEG's response to NRC Generic Letter (GL) 95-07, Pressure Locking and Thermal Binding of Power Operated Gate Valves, especially with respect to its applicability to the 2SJ13 valve. The team reviewed vendor and PSEG thrust/torque calculations to verify that the valve had sufficient margin to perform its design basis function. The team performed a walkdown of 2SJ13 with the system engineer and piping seismic stress engineer to visually inspect the physical/material condition of the valve and its support systems and to ensure adequate configuration control. The team reviewed and discussed PSEG's evaluation and analysis of concrete cracking in the 2SJ13 support pedestal to assess the material condition, potential impact on system operability, and PSEG's related corrective actions. The team also reviewed corrective action documents and system health reports to determine whether there were any adverse operating trends or existing issues affecting valve reliability or performance.

b. Findings

No findings were identified.

.2.1.4 Unit 2 Residual Heat Removal Pump Suction Valve (21RH4)

a. Inspection Scope

The team inspected the residual heat removal (RHR) RWST supply valve (21RH4) to verify that it was capable of performing its design function in response to transients and accidents. The normally open 21RH4 valve is required to be open for the RHR system to perform its initial emergency core cooling system (ECCS) injection function and required to close to isolate the RWST during containment sump recirculation. The team reviewed applicable portions of Salem's TSs, the UFSAR, and the RHR system design basis document (DBD) to identify design basis requirements for the valve.

The team reviewed design calculations, valve specifications, and operating history to verify that the valve was acceptable for RHR service, and to verify that it met the applicable American Society of Mechanical Engineers (ASME) Code requirements. The team reviewed a sample of ST results to verify that valve performance met the acceptance criteria and that the criteria were consistent with the design bases. Also, the team reviewed operator training lesson plans to verify the technical adequacy and details of the plan. The team interviewed the MOV program engineer and reviewed valve diagnostic test results and trending to assess valve performance capability, design margin, and susceptibility to recent industry OE. The team reviewed a sample of RHR system corrective action documents (NOTFs), the RHR system health report, and applicable test results to determine if there were any adverse operating trends and to ensure that PSEG adequately identified and addressed any adverse conditions. The team also performed several walkdowns of the valve, adjacent area, accessible portions of the RHR system, and associated control room instrumentation to assess the material condition, operating environment, and configuration control.

b. Findings

No findings were identified.

.2.1.5 23 Chiller

a. Inspection Scope

The team inspected one of the three Unit 2 chiller packages, specifically the 23 chiller, to verify that it was capable of performing its design function. Each chiller is a 50 percent capacity system used to remove heat from the auxiliary building and the main control room during both normal and emergency operating conditions. The team performed several walkdowns of the Unit 2 chillers to assess the system condition, configuration control, and the operating environment. The team interviewed the system engineer and also performed a system walkdown together to discuss operational challenges and assess system deficiencies. The team reviewed the UFSAR, vendor documentation, and drawings to identify design requirements of the chiller system. The team also reviewed PM and internal inspection documents associated with the chiller heat exchangers (HXs) and the service water (SW) system to ensure that PSEG adequately maintained HX tube integrity and appropriately addressed the potential for biological fouling. The team also reviewed the maintenance and functional history of the 23 chiller by sampling corrective action documents and the system health report to ensure that PSEG appropriately identified, characterized, and corrected problems.

b. Findings

No findings were identified.

.2.1.6 Unit 1 Solid State Protection System Train A

a. Inspection Scope

The team reviewed the maintenance, testing, and operation of the Unit 1 solid state protection system (SSPS) with specific emphasis on the A train components to verify that the system was capable of performing its design function of providing proper actuation signals under operating, transient, and accident conditions. The team verified that the overall SSPS system actuation, from protective signal actuation through RTB opening, was within the TS requirements for the selected scenarios. The team reviewed selected modifications, including temporary changes, to verify that the modifications did not adversely impact system design functions or capability. The team reviewed the vendor technical manual to verify that PSEG adequately incorporated the guidelines, including the recommended frequency, into the associated testing and maintenance procedures. The team verified that PSEG properly implemented the associated TS operating and testing requirements. The team also reviewed corrective action NOTFs and system health reports to confirm that PSEG appropriately identified and resolved any observed deficiencies or adverse trends. The team performed an internal, non-intrusive inspection of the Unit 1 SSPS cabinets in the control room to assess the material condition, operating environment, and configuration control.

b. Findings

No findings were identified.

.2.1.7 Unit 1 and Unit 2 Refueling Water Storage Tank and Containment Sump Level Instrumentation

a. Inspection Scope

The team reviewed portions of the instrument uncertainty and setpoint calculations for the Unit 1 and Unit 2 RWST and containment sump level instrumentation to confirm that assumptions and design inputs regarding tank geometry, process effects, reference leg configuration, instrument uncertainty, and analytical or process limits had been appropriately considered, and that appropriate statistical methodology had been used. This included confirming that the calculations were consistent with operation under operating, transient, and accident conditions. In addition, the team reviewed a sample of calibration results and trending data, as reported by PSEG's maintenance measured data program. The team performed several walkdowns of the RWST level instrumentation panels, including non-intrusive internal inspections, to assess the installed configuration, material condition, the operating environment, and potential vulnerability to hazards. The team also reviewed associated corrective action NOTFs and system health reports to confirm that PSEG appropriately identified and resolved any observed deficiencies or adverse trends.

b. Findings

Introduction: The team identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not promptly identify and correct conditions adverse to quality. Specifically, PSEG did not promptly identify and correct degraded conditions associated with the Unit 1 and Unit 2 AFWST and RWST instrumentation panels.

Description: On June 24, 2014, the team performed a system walkdown of the Unit 1 and Unit 2 RWST panels to assess the condition of the level instrumentation in the field. While inspecting the external condition of the panels, the team identified four 1-inch diameter bolts missing on the top of the Unit 1 RWST 378-1 panel (one bolt hole on each corner). The missing bolts on the top of the Unit 1 RWST 378-1 panel potentially allowed external environmental elements (rain, snow, sleet) to enter the inside of the sealed panel which could adversely impact the safety-related RWST level instrumentation. The team noted an operator aid posting (SC-MDA-93-004) on all of the outdoor RWST and AFWST panels that stated "Close the door. Leaving this door open can cause instrument line freezing resulting in a Technical Specification violation or plant shutdown." On June 25, the team completed a follow-up walkdown with the RHR system engineer to open and inspect the inside of the panel to assess the material condition and potential water intrusion impact. The team observed that the internal insulation of the Unit 1 RWST panel was severely degraded, there was significant corrosion of the panel itself, and some corrosion evident on several internal components. PSEG initiated corrective action NOTF 20654991 for this condition and promptly installed bolts on top of the Unit 1 RWST 378-1 panel. The team's initial extent-of-condition walkdown also identified that four bolts atop one of the Unit 2 AFWST panels were not fully engaged and the team observed some corrosion within the panel. PSEG initiated corrective action NOTF 20654996 for this condition.

On July 8, as part of the team's follow-up extent-of-condition walkdowns, the team identified four missing bolts on top of the Unit 1 AFWST 802-1 panel and questioned the functionality of an internal cooling fan within the panel (the fan was not running at the time). PSEG initiated corrective action NOTF 20656136 for the missing bolts in Unit1 AFWST panel 802-1. On July 21, during a subsequent extent-of-condition walkdown, the team identified additional conditions adverse to quality that included: a failed fan inside the Unit 1 AFWST 802-1 panel (NOTF 20657114), a failed thermostat causing high temperatures in the AFWST 379-1 panel (NOTF 20657115), and a damaged heater in the AFWST 379-1 panel (NOTF 20657117). PSEG initiated corrective actions NOTFs for each of these conditions, including unplugging the failed fan in Unit 1 AFWST panel 802-1. Based on interviews and a CAP database review, the team found no evidence that the missing bolts were removed within the last three years.

The team noted that PSEG had several opportunities to identify the missing bolts and degraded conditions within the panels. Although equipment operators and system engineers periodically toured the panel area, they did not identify the missing bolts and thus did not adequately evaluate the conditions within the panels for potential impact to the safety-related equipment installed inside. In September 2012, operators initiated NOTFs 20576202 and 20576087 for rusty conditions inside and outside of the Unit 1 AFWST 802-1 panel. On July 10, 2013, PSEG personnel replaced the door seal on the Unit 1 AFWST 802-1 panel (work order 60108142) in an attempt to correct the water in-leakage. During a follow-up AFWST 802-1 panel walkdown in May 2014, operators noted in NOTF 20652576 that "further deterioration as has been seen over the last 20 months will eventually lead to inoperability of the equipment and render it unable to perform its design function." In April 2014, personnel inspected and performed work inside of the Unit 1 RWST 378-1 panel to investigate the cause of a level discrepancy (NOTF 20646537). In June 2014, NOTF 20653134 stated that "following a thunderstorm and rain, non-TS channel 2LA2705 in the Unit 2 AFWST 802-2 panel failed high. It appears that the rain affects the 2LA2705 channel." In addition, PSEG previously performed a thorough RWST panel inspection every three years (last performed in 2008); however, PSEG reduced the scope of this PM inspection to include limited portions of it during their annual Winter readiness PM of the panels.

<u>Analysis</u>: The team determined that the inadequate identification and resolution of the conditions adverse to quality associated with the Unit 1 and Unit 2 AFWST and RWST instrumentation panels was a performance deficiency that was within PSEG's ability to foresee and correct. The finding was associated with the Mitigating Systems cornerstone and was more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, if left uncorrected, the continued exposure to external environmental elements and/or the existing internal degraded conditions could potentially result in loss of level indication, non-conservative level indication, and/or loss of low level alarm functions. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the team determined that the finding was of very low safety significance (Green), because the finding was a deficiency affecting the design or qualification of a mitigating system, structure, or component (SSC), where the SSC maintained its operability.

The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not identify issues completely, accurately, and in a timely manner in accordance with the CAP. Specifically, PSEG did not identify degraded conditions associated with the Unit 1 and Unit 2 AFWST and RWST panels and take timely and appropriate corrective actions [P.1].

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” requires in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, PSEG failed to promptly identify and correct conditions adverse to quality. Specifically, since initial panel installation (estimated), PSEG did not promptly identify and correct the missing bolts on the Unit 1 RWST 378-1 panel until June 24, 2014, and on the Unit 1 AFWST 802-1 panel until July 8, 2014. In addition, PSEG did not promptly identify and correct the degraded conditions within the Unit 1 AFWST panels from approximately July 8, 2014, to July 21, 2014 (estimated). PSEG’s short-term corrective actions included installing bolts/plugs on the Unit 1 RWST panel 378-1, unplugging the failed fan in Unit 1 AFWST panel 802-1, and initiating corrective action NOTFs for each adverse condition. Because this finding was of very low safety significance and because it was entered into PSEG’s CAP (NOTFs 20654991, 20654996, 20656136, 20657114, 20657115, and 20657117), this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. **(NCV 05000272; 05000311/2014007-01, Failure to Identify Degraded Conditions Associated with the Unit 1 and Unit 2 RWST and AFWST Panels)**

.2.1.8 Unit 2 Auxiliary Feedwater Storage Tank and Auxiliary Feedwater Suction Piping

a. Inspection Scope

The team inspected the Unit 2 AFWST and AFW suction piping to verify their capability to meet design basis requirements. The safety-related AFW system supplies feedwater to the secondary side of the steam generators when the non-safety related main feedwater system is not available. The AFW system is relied upon to prevent core damage and system overpressurization in the event of accidents such as a loss of normal feedwater or secondary system pipe rupture, and to provide a means for plant cooldown. The team conducted a walkdown of the Unit 2 AFWST and AFW suction piping with the AFW system engineer, and also performed several independent walkdowns, including control room instrumentation. These walkdowns examined the material condition of accessible portions of the Unit 2 AFWST and AFW suction piping and included the verification of tools and spool pieces required to enable operators to line up alternate sources of water to the AFW pump suctions. The team reviewed the operator actions for various AFWST level indications and the procedures used to line up the alternate water sources to the AFW suction piping. The team reviewed the calculations for AFWST useful water volume, AFWST outlet piping vortexing, and AFW pump net positive suction head (NPSH). The team reviewed associated AFW drawings, design changes and modifications, and engineering evaluations to verify that PSEG maintained the design bases for the AFWST and AFW suction piping. The team reviewed system health reports, corrective action documents, maintenance history, and testing records to determine if there were any adverse operating trends and to ensure that PSEG adequately identified and addressed any adverse conditions.

b. Findings

No findings were identified.

2.1.9 22 Residual Heat Removal Pump

a. Inspection Scope

The team reviewed applicable portions of Salem TSs, the UFSAR, and the RHR system DBD to identify the design bases requirements for the 22 RHR pump. The team reviewed design calculations and site procedures to verify that PSEG appropriately translated the design bases and design assumptions into these documents. The team also reviewed design and operational requirements with respect to pump flow rate, developed head, achieved system flow rate, and NPSH. The team verified that minimum flow requirements as described in NRC Bulletin 88-04 were satisfied under all conditions to avoid pump damage. The team reviewed the pump discharge check valve testing and the associated acceptance criteria, to ensure that the valve would support maximum accident flow conditions and perform its closure function to prevent undesired backflow. The team reviewed the adequacy of assumptions, limiting parameters, the pump's protection from the formation of air vortexes, and the adequacy of its suction from the containment sump.

The team verified that test procedures and test results were supported by design basis documents, acceptance criteria for tested parameters were supported by calculations or other engineering documents, and that tests and analyses served to validate component operation under accident and transient conditions. The team also reviewed the adequacy of the pump baseline for in-service testing including the actual pump performance results to ensure that the pump was performing within accident analysis assumptions. The team reviewed operating and emergency operating procedures (EOPs) to verify that selected operator actions could be accomplished. Additionally, the team reviewed control schematics to verify that the system operation complied with the system design requirements. The team performed a walkdown of the pump, accessible RHR piping, and the adjacent area to assess the material condition, operating environment, and configuration control. The team also reviewed a sample of RHR system corrective action documents, the RHR system health report, and applicable test results to determine if there were any adverse operating trends and to ensure that PSEG adequately identified and addressed any adverse conditions.

b. Findings

No findings were identified.

.2.1.10 Unit 2 Containment Pressure Vacuum Relief Outlet Valve (2VC5)

a. Inspection Scope

The team inspected the Unit 2 containment pressure vacuum relief outlet valve (2VC5) to verify its ability to meet its design basis requirements. The 2VC5 valve's safety-related functions include containment isolation capability upon a high containment pressure signal or high radiation signal and control of the differential pressure between the containment and the atmosphere during normal operation. The team reviewed in-service test (IST) program requirements and evaluated IST surveillance results, including stroke time testing, to verify acceptance criteria were met and any performance degradation identified. The team also performed several walkdowns of 2VC5 and valves in the vicinity to assess equipment condition, configuration control, operating environment, and potential hazards. The team reviewed design drawings and vendor documentation to ensure that PSEG appropriately controlled design requirements. The team reviewed operator and equipment logs used to track the amount of time that the 2VC5 was open (in Modes 1 - 4) to verify that it met site specific administrative limits and licensing basis commitments. The team also reviewed the maintenance and functional history of the 2VC5 by sampling corrective action documents and the system health report to ensure that PSEG appropriately identified, characterized, and corrected problems.

b. Findings

No findings were identified.

.2.1.11 C 125 Vdc Battery and 1C 125 Vdc Bus

a. Inspection Scope

The team reviewed the design, testing, and maintenance of the 1C 125 Vdc station battery and its associated distribution bus to verify that they were capable of performing their design function of providing a reliable source of direct current (DC) power to required loads under operating, abnormal, and accident conditions. The team reviewed the voltage regulation calculations to ensure that adequate voltage would be available to required loads under accident and station blackout (SBO) conditions. The team also reviewed the short circuit and breaker/fuse coordination calculations to determine if the circuit breakers and fuses were appropriately sized and were capable of interrupting potential circuit faults. The team verified that PSEG used the proper cable resistance and ampacity values in both the voltage regulation and short circuit calculations through a comparison of corrected values provided in the National Electric Code. The team also reviewed battery test procedures and test results to verify that the testing was in accordance with industry standards, aligned with the design calculations, and fully satisfied TS requirements. The team verified that the testing results confirmed acceptable performance of the battery and adequate battery capacity.

The team interviewed design engineers regarding design margin, operation, and testing of the DC system. The team performed several walkdowns of the 1C 125 Vdc battery, 1C DC bus, and associated battery chargers to assess the material condition, operating environment, and configuration control. The team reviewed the battery seismic evaluations and compared them to the as-installed configuration to verify that the battery was capable of performing its design function under design basis accident conditions. The team also reviewed corrective action NOTFs and system health reports to confirm that PSEG appropriately identified and resolved any observed deficiencies or adverse trends.

b. Findings

No findings were identified.

.2.1.12 22 Residual Heat Removal Pump Motor

a. Inspection Scope

The team inspected the 22 RHR pump motor to determine whether it could fulfill its design basis function of providing adequate horsepower for the pump to deliver the required flow under normal operating, transient, and accident conditions. The team walked down the RHR pump, the pump motor, and both Unit 2 RHR pump rooms to assess the material condition, configuration control, and the operating environment. The team reviewed the RHR pump performance curve and design basis flow requirements to evaluate the required capacity for the break horsepower required by the pump during design basis conditions. The team reviewed the motor overcurrent relay setting calculation, relay settings, and recent overcurrent relay calibration tests to evaluate whether the protective relays would provide for reliable motor operation at design basis minimum voltage conditions. Finally, the team reviewed corrective action documents to verify PSEG was identifying and correcting issues with the motor, and to verify that there were no adverse trends.

b. Findings

No findings were identified.

.2.1.13 23 Turbine Driven Auxiliary Feedwater Pump Steam Supply Valve

a. Inspection Scope

The team inspected the 23 turbine driven AFW (TDAFW) pump steam supply valve, 2MS132, to verify its capability to perform its design basis function. The 2MS132 valve is a normally closed air operated valve (AOV) located in the steam supply line from the steam header to the Unit 2 TDAFW pump turbine. The 2MS132 valve opens automatically upon the receipt of a start signal to the TDAFW pump. The team reviewed the control circuit diagrams, the opening/closing calculations, and the recent surveillance test documents to verify that the valve functioned as designed. The team also reviewed the engineering change package, applicable work orders, and the post maintenance testing for the recent replacement of the valve/actuator connection to verify that PSEG specified and met the appropriate design requirements. The team interviewed the AOV program engineer and the AFW system engineer to gain an understanding of maintenance issues and overall reliability of the valve. The team reviewed applicable plant drawings, AFW system health reports, AOV program health reports, maintenance records, and performed several system walkdowns to assess the material condition, performance history, and PSEG's configuration control. The team reviewed work orders and corrective action documents to verify that PSEG appropriately identified and resolved deficiencies and properly maintained the valve.

b. Findings

No findings were identified.

.2.1.14 22 Residual Heat Removal Heat Exchanger

a. Inspection Scope

The team inspected the 22 RHR HX to verify that it was capable of meeting its design basis requirements. The team reviewed the Salem UFSAR, the RHR DBD, drawings, and procedures to identify the HX design basis requirements. The RHR HXs are designed to remove residual and sensible heat from the core and reduce the temperature of the reactor coolant system during the second phase of plant cooldown. Under normal operating conditions, the RHR system HX will reduce the temperature of the reactor coolant from 350 °F to 140 °F within 22 hours following reactor shutdown.

The team reviewed the design pressure and temperature of the HX shell and tubes to verify that operational procedures and performance under accident conditions were consistent with the design parameters. The team reviewed the flowpaths used in the EOPs for containment sump recirculation to ensure that the design rated flow through the tube side of the HX was consistent with the allowable vendor specifications. The team reviewed the corresponding pressures within the shell and tube side of the HX in the long-term recirculation alignment to verify that the system pressures would be consistent with licensing bases assumptions in the UFSAR. The team reviewed the design and logic for the shell side valves associated with the component cooling water (CCW) supply to the RHR HX to ensure that adequate shell side cooling would exist prior to initiating containment sump recirculating water to avoid the possibility of any steam void formation. The team reviewed corrective action documents to verify that the RHR HX had not been showing signs of leakage and to verify that PSEG appropriately identified and resolved deficiencies.

b. Findings

No findings were identified.

.2.1.15 11 Safety Injection Pump Breaker

a. Inspection Scope

The team inspected the 11 SI pump breaker (1AD1AX5D) to verify that it was capable of performing its design function. The team reviewed the one-line diagrams, control schematics, and the design basis as defined in the UFSAR to verify the adequacy of the 11 SI pump breaker to provide the loading and switching requirements under the worst case loading conditions. The team reviewed the breaker closing permissives and interlocks to verify that the breaker opening and closing control circuits functioned as designed. The team reviewed a sample of preventive and corrective maintenance test results to verify that the applicable test acceptance criteria and test frequency requirements were satisfied. The team performed several walkdowns of the 4KV breaker and its associated 4KV bus to assess the installed configuration, material condition, operating environment, and potential vulnerability to hazards. The team also reviewed the maintenance and operating history of the breaker, associated corrective action NOTFs, the last replacement/refurbishment of the breaker, and applicable test results to determine if there were any adverse operating trends and to ensure that PSEG adequately identified and addressed any adverse conditions.

b. Findings

No findings were identified.

2.1.16 12BF22 and 14BF22 Containment Penetration Seals

a. Inspection Scope

The team inspected the 12BF22 and 14BF22 containment penetration seals to verify that they were capable of meeting their design basis requirements. The 12BF22 and 14BF22 containment penetration seals are part of the primary containment boundary. The penetrations contain a non-safety related penetration cooling system which uses station air to maintain the temperature of the concrete less than 150 °F to prevent long-term degradation of the concrete surrounding the penetration. The team performed several walkdowns of the penetrations, both inside and outside of containment, and accessible portions of their associated penetration cooling system to ensure conformance with the design bases. The team used a contact pyrometer to independently verify that concrete temperatures and penetration cooling heat removal were within design requirements and to ensure that system operation was in accordance with design documentation. The team also conducted interviews and a system walkdown with PSEG engineers to assess the condition of the penetrations and to ensure proper operation of the penetration cooling system. The team reviewed the UFSAR, drawings, Maintenance Rule scoping documents, and the structural monitoring program to assess the penetration conditions against design requirements. The team also reviewed the most recent IST Type A integrated leak test to ensure that leakage requirements associated with the penetrations were in accordance with IST program and TS limits. The team also reviewed the maintenance and functional history of the 12BF22 and 14BF22 penetrations by sampling corrective action documents and system health reports to ensure that PSEG appropriately identified, characterized, and corrected problems.

b. Findings

No findings were identified.

.2.2 Review of Industry Operating Experience and Generic Issues (4 samples)

The team reviewed selected OE issues for applicability at Salem Unit 1 and 2. The team performed a detailed review of the OE issues listed below to verify that PSEG had appropriately assessed potential applicability to site equipment and initiated corrective actions when necessary.

.2.2.1 NRC Information Notice 2013-05: Battery Expected Life and Its Potential Impact on Surveillance Requirements

a. Inspection Scope

The team evaluated PSEG's applicability review and disposition of NRC Information Notice (IN) 2013-05 to determine if Salem Generating Station was susceptible to the battery performance issues stated in the IN. The NRC issued the IN to alert licensees to issues of non-conservative TSs regarding surveillance requirements due to reductions in battery expected life as a result of load growth and environmental conditions. The team reviewed PSEG's evaluation of the issues presented in this IN and assessed PSEG's actions to monitor battery room and cell conditions, such as temperature. The team reviewed PSEG's battery testing and maintenance programs with respect to the IN concerns (see also Section 1R21.2.1.11). The team also reviewed PSEG's battery replacement criteria to ensure that the required capacity would be available throughout the battery's installed lifetime.

b. Findings

No findings were identified.

.2.2.2 NRC Information Notice 2013-18: Refueling Water Storage Tank Degradation

a. Inspection Scope

The team evaluated PSEG's applicability review and disposition of IN 2013-18. The NRC issued the IN to alert licensees to issues associated with leakage due to flaws in RWST welds. The team reviewed PSEG's evaluation of their RWST maintenance plans, and the recommended actions associated with the review. The team performed several walkdowns of the Unit 1 and Unit 2 RWSTs looking at the external condition of the tank and the tank welds. The team also reviewed the most recent internal and external inspection reports for both the Unit 1 and Unit 2 RWSTs. The team also reviewed corrective action documents and system health reports to determine whether there were any adverse operating trends, system leakage, or existing issues affecting tank integrity.

b. Findings

No findings were identified.

.2.2.3 NRC Information Notice 2011-12: Reactor Trips Resulting from Water Intrusion into Electrical Equipment

a. Inspection Scope

The team evaluated PSEG's applicability review and disposition of NRC IN 2011-12. The NRC issued the IN to inform licensees of several events involving water intrusion into electrical equipment that resulted in reactor trips. PSEG initiated order 70126964 to address potential reactor trip risk vulnerabilities that could result from water intrusion. The team reviewed the information to assess the current vulnerabilities identified to determine if PSEG took effective and timely corrective actions commensurate with the risk to the station. The team also interviewed station personnel assigned with corrective actions to understand the status. The team performed several independent walkdowns of the auxiliary building (including the emergency diesel generators and vital switchgear rooms), SW intake motor control centers (MCCs), fire pump house, main control room, and turbine building to assess the material condition, operating environment, and potential vulnerability to water intrusion. The team also performed a CAP review to ensure that PSEG appropriately identified and resolved water intrusion issues (see also Section 1R21.2.1.7).

b. Findings

No findings were identified.

.2.2.4 NRC Information Notice 2012-14: Motor-Operated Valve Inoperable Due To Stem-Disc Separation

a. Inspection Scope

The team evaluated PSEG's applicability review and disposition of NRC IN 2012-14. The NRC issued this IN to inform licensees about an event where a MOV failed at the connection between the valve stem and disc. The team reviewed PSEG's actions relative to the conditions described within the IN to ensure that PSEG had performed appropriate evaluations for the Salem Units. The team interviewed the MOV program engineer, reviewed a sample of valve diagnostic test results and trending, and reviewed a sample of PSEG's remote valve position verifications to independently assess Salem MOV susceptibility to this failure mechanism.

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 problems that PSEG had previously identified and entered into the CAP. The team reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions. In addition, the team reviewed corrective action NOTFs written on issues identified during the inspection to verify adequate problem identification and incorporation of the problem into the CAP. The specific corrective action documents that the team sampled and reviewed are listed in the attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On July 24, 2014, the team presented the inspection results to Mr. Lawrence Wagner, Salem Plant Manager, and other members of PSEG management. The team reviewed proprietary information and returned the associated documents to PSEG at the end of the inspection. The team verified that no proprietary information is documented in the report.

SUPPLEMENTAL

INFORMATION

KEY POINTS OF CONTACT

PSEG Personnel
C. Beeson, Lead Nuclear Engineer
J. Bergeron, I&C Manager
M. Brummitt, Nuclear Shift Supervisor
K. Chambliss, Regulatory Assurance Manager
M. Crawford, Senior Mechanical Design Engineer (PSEG Contractor)
R. DeNight Jr., Operations Director
P. Essner, Electrical Engineer
A. Garcia, Senior Nuclear Engineer
K. King, Regulatory Assurance
D. Lafleur, Regulatory Assurance
D. Maxey, MOV Program Engineer
R. Moore, Electrical and I&C Manager
G. Morrison, Senior Mechanical Design Engineer
K. Musante, AOV Program Engineer
L. Oberembt, Manager, System Engineering
J. Okulewicz, RHR System Engineer
J. Owad, Nuclear Engineer
M. Pennington, Nuclear Engineer
G. Stafford, AFW System Engineer
L. Wagner, Plant Manager, Salem
K. Wolf, Senior Nuclear Engineer

NRC Personnel:

C. Cahill	Senior Reactor Analyst
P. Finney	Senior Resident Inspector
A. Ziedonis	Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Open and Closed

05000272 & 311/2014007-01	NCV	Failure to identify degraded conditions associated with the Unit 1 and Unit 2 RWST and AFWST panels. (Section 1R21.2.1.7)

LIST OF DOCUMENTS REVIEWED

Audits and Self-Assessments

70132457, IST Program Focused Area Self-Assessment, performed 5/21/12 - 5/24/2012
70149561-040, Salem NRC Component Design Bases Inspection Focused Area Self-Assessment Report, dated 3/11/14

Calculations

2P-2SIG-0007, Calculation for Pipe Support 2P-2SIG-7, dated 11/7/91
2672041, Containment Building Ventilation Piping, Revision 4
5675176, Containment Building Ventilation Piping, Revision 4
ES-1.002, 13.8KV, 4.16KV & LV Buses Short Circuit Calculation, Revision 4
ES-4.003, 125 Volt DC Short Circuit and System Voltage Drop Calculation, Revision 9
ES-4.004, 125 Volt DC Battery and Battery Charger Sizing Calculation, Revision 12
ES-4.006, 125 Volt DC Component Study and Voltage Drop Calculation, Revision 8
ES-10.008, Resistance and Reactance Values for Salem Power Cables, Revision 0
ES-13.006, Breaker and Relay Coordination Calculation Safety Related AC Systems, Revision 3
ES-13.008, 250V, 125V and 28V DC Systems and 115VAC ASDS Overcurrent Coordination, Revision 3
ES-15.017, Salem Unit 1 & 2 Analytical Voltage Analysis, Revision 2
Midas 2011.101 (21RH4), 21RH4 AC Motor Operated Valve GL 96-05 Gate Valve, Revision 2
Midas 2011.101 (22SJ44), 22SJ44 AC Motor Operated Valve GL 96-05 Gate Valve, Revision 3
S-1-CAV-MDC-0665, Unit 1 Battery Room Cooling and Heating Load Calculation, Revision 1
S-1-RHR-MEE-1593, Analysis of the RHR System Water Hammer Event, Revision 2
S-2-SJ-MDC-0908, MOV Capability Assessment for 22SJ44, Revision 0
S-C-AF-MDC-0432, Net Positive Suction Head (NPSH) Available for the Auxiliary Feedwater Pump NPSH, Revision 1
S-C-MS-NDC2136, 1 & 2 MS and Turbine Bypass Aux Feed Pump Turb S, Revision 1
S-C-PC-MDC-1657, Penetration Cooling Needle Valve Adjustment, Revision 3
S-C-RHR-MDC-0515, RHR Pump Discharge Orifice, Revision 0
S-C-RHR-MDC-1463, RHR Pump TDH Calculation, Revision 1
SC-SJ006-01, Salem Unit 1, RWST Level Instrumentation Uncertainty Calculation, Revision 0
SC-SJ007-01, Salem Unit 2, RWST level Instrument Uncertainty Calculation, Revision 2
S-C-SJ-MDC-2124, Pressure Increase on RHR Side of SJ44 following a Small Break LOCA, Revision 0
S-C-SJ-MDC-2127, Design Basis Differential Pressure (22SJ44), Revision 0
S-C-VAR-CDC-0095, Tank Volume Curve Calculations, Revision 9
S-C-VAR-MDC-1429, Minimum Usable Volume for Various Safety Related and Important-to-Safety Tanks, Revision 10
SC-WD001-01, Salem Unit 1 & 2 Containment Sump Level Indication and Level Switch, Revision 3
S-C-ZZ-SDC-1419, Environmental Design Criteria, Appendix B, Revision 4
VTD 901698, RHR Minimum and Maximum Containment Recirculation Spray Flow Salem Units 1 & 2, Revision 0

Completed Surveillances and Functional Tests
S1-IC-ST.SSP-0008, SSPS Trains A Periodic Functional Test, performed 3/11/14
S1-IC-ST.SSP-0011, SSPS Trains B Reactor Trip Breaker UV Coil Test, performed 4/22/14
S1-IC-ST.SSP-0014, Reactor Trip Breaker Operability Re-Test, performed 12/10/13
S1.IC-TR.SSP-0003, Response Time of SSPS Slave Relays, Train A, performed 11/10/11
S1.OP-LR.CS-0001, Type C Leak Rate Test 11CS2, performed 10/29/11
S1.OP-ST.SSP-0001, Manual Safety Injection - SSPS, performed 5/8/13
S1.OP-ST.SSP-0002, SEC Mode Ops Testing 1A Vital Bus, performed 4/17/13
S1-OP-ST-SSP-0007, ESF Containment Isolation Phase A, performed 4/17/13
S1.OP-ST.SSP-0009, ESF SSPS Slave Relays Test - Train A, performed 5/11/13
22CS36, Thrust Overlay, Pullout Force Trend, performed 10/19/06 & 3/28/08
22SJ45, Thrust Overlay, Pullout Force Trend, performed 4/23/05 & 11/2/12
22SJ113, Thrust Overlay, Pullout Force Trend, performed 4/19/05 & 10/20/12
S2.IC-TR.ZZ-0002, Unit 2 Master Time Response, performed 4/25/14 - 7/22/14
S2.OP-LR.CS-0002 Attachment 1, Leak Rate Test Data Sheet, performed 10/20/12
S2.OP-SO.AF-0001 Attachment 3, Independent Verification of AFW Standby Alignment, performed 2/2/14
S2.OP-ST.AF-0003, Inservice Testing - 23 Auxiliary Feedwater Pump, performed 3/27/14
S2.OP-ST.CAN-0001, Primary Containment Valves Monthly, performed 2/4/14, 3/5/14, 4/7/14, 5/9/14, & 6/30/14
S2.OP-ST.CBV-0001, Inservice Testing Containment Ventilation Valves Modes 1-6, performed 9/18/13, 12/20/13, 4/15/14, 5/2/14, & 6/19/14
S2.OP-ST.CBV-0004, Refueling Operations Containment Purge and Pressure-Vacuum Relief Isolation, performed 4/16/14
S2.OP-ST.CH-0004, Chilled Water System - Chillers, performed 6/5/14 & 6/19/14
S2.OP-ST.CS-0004, Inservice Testing Containment Spray Valves Modes 5-6, performed 5/23/14
S2.OP-ST.RHR-0002, Inservice Testing 22 RHR Pump, performed 4/28/14
S2.OP-ST.RPI-0001, IST Remote Position Verification 22SJ113, performed 4/21/14 & 4/24/14
S2.OP-ST.RPI-0003, IST - Remote Position Verification Cold Shutdown, performed 4/17/14
S2.OP-ST.SJ-0003, Inservice Testing Safety Injection Valves Modes 1-6, performed 6/9/14
S2.OP-ST.SJ-0005, Inservice Testing Safety Injection Valves Modes 5-6, performed 5/23/14
S2.OP-ST.SSP-0001, Manual Safety Injection - SSPS, performed 5/5/14
S2.OP-ST.SSP-0011, Engineered Safety Features Response Time Test, performed 5/6/14
S2.OP-PT.SW-0008, Service Water Fouling Monitoring Chiller Condensers, performed 11/10/13
SC.MD-FT.125-0003, 125 Volt Station Batteries Performance Discharge Testing Using BCT-2000, performed 10/23/11
SC.MD-ST.125-0003, Quarterly Inspection and Preventive Maintenance of Units 1, 2, & 3 125 Volt Station Batteries, performed 9/11/13, 10/23/13, & 4/22/14
SC.MD-ST.125-0006, 125V Batteries 18 Month Service Test Using BCT-2000, performed 4/15/13
SC.MD-ST.125-0007, Preventive Maintenance and 18 Month Surveillance of 125 V Battery Charger Using BCT-2000, performed 11/13/13
SC.MD-ZZ-0003, Inspection and Preventive Maintenance of Units 1, 2 & 3 Batteries, performed 6/2/14

<u>Corrective Action Notifications</u>

20059022	20507202	20590473	20641498	20655961*
20065123	20507907	20590781	20642232	20655968*
20139111	20508172	20592864	20643841	20655975*
20140618	20508173	20596665	20646537	20656048*
20180247	20508283	20597570	20648622*	20656134*
20189000	20508285	20600693	20649074	20656136*
20193094	20515651	20603850	20650211	20656145*
20204138	20517555	20603998	20650242	20656146
20215096	20523282	20604126	20650257	20656152*
20241233	20524122	20604510	20650573	20656199*
20262700	20524138	20605568	20650574	20656261
20263225	20525658	20606247	20651834	20656283
20272356	20525899	20606402	20652576	20656302
20301741	20526734	20606757	20652976	20656499*
20304185	20527088	20609374	20653134	20656700*
20341948	20537260	20611446	20653590	20656763*
20343139	20543475	20611549	20653771	20656917
20344674	20547578	20616842	20654482	20657113*
20351724	20549493	20619267	20654560	20657114*
20359524	20552126	20619277	20654700*	20657115*
20363673	20554693	20620999	20654706	20657117*
20381701	20555585	20621196	20654873*	20657147*
20381702	20555803	20621964	20654913	20657188*
20381724	20558208	20623991	20654937*	20657190*
20388559	20561309	20625715	20654953*	20657193*
20396308	20563545	20626574	20654991*	20657197*
20396843	20567946	20626939	20654996*	20657201*
20431398	20568550	20627069	20655035*	20657220*
20438828	20569234	20627926	20655038*	20657228*
20438965	20570437	20628387	20655048*	20657229*
20439257	20573196	20629409	20655049*	20657297*
20442084	20573304	20629410	20655166	20657312*
20444345	20574703	20629417	20655210*	20657320*
20444348	20576087	20629520	20655263	20657384
20445215	20576201	20629771	20655291*	20657378*
20448327	20576202	20631356	20655292*	20657388*
20449605	20580418	20631993	20655294*	20657405*
20456687	20580856	20633705	20655298*	20657421*
20456990	20587013	20636510	20655577*	20657425*
20481613	20587545	20636977	20655673*	20657447*
20498541	20587635	20637186	20655892*	20657448*
20505677	20588097	20637967	20655895*	20657503*
20506975	20589698	20638586	20655946*	

* notification written as a result of this inspection

Design & Licensing Bases
80064372, Containment Pressure Release Admin Limit Change to 1250 Hrs/Yr, dated 1/20/04
LER No. 87-003-00, Containment Pressure/Vacuum Relief Valves Open Beyond 1000 Hour Limit Due to Procedural Inadequacy, dated 4/28/87
LR-N04-0120, 2003 Summary of Revised Regulatory Commitments for Salem Generating Station, Salem Unit No. 1 and No. 2, dated 12/15/04
SC.DE-BD.AF-0001, Auxiliary Feedwater System UFSAR Chapter 15 DB/LB System Validations, Revision 0
SC.DE-BD.MS-0001, Main Steam System UFSAR Chapter 15 DB/LB System Validations, Revision 0
SC.DE-BD.RHR-0001, Residual Heat Removal System UFSAR Chapter 15 DB/LB System Validations, Revision 0
SC.DE-BD.SJ-0001, Safety Injection System UFSAR Chapter 15 DB/LB System Validations, Revision 0

Drawings
201051 Sh. 2, Reactor Protective System Trip Signals, Revision 13
201052 Sh. 3, Reactor Protective System NI Trip Signals, Revision 7
201053 Sh. 4, Reactor Protective System NI Permissive Signals & Blocks, Revision 8
201054 Sh. 5, Reactor Coolant System Trip Signals, Revision 10
201055 Sh. 6, Pressurizer Trip Signals, Revision 8
201056 Sh. 7, Steam Generator Trip Signals, Revision 8
201057 Sh. 8, Safeguards Actuation Signals, Revision 23
201065 Sh. 16, Turbine Trip, Runback & Gen. Protection Signals, Revision 15
201150 Sh. 1, Reactor Protective System Logic Diagram Symbols, Revision 4
205202, No. 1 Unit Steam Generator Feed & Condensate, Revision 83
205216 Shs. 1, 2, 3, 4, 5, 6, 7, & 8, No. 1 & 2 Units Chilled Water, Revisions 64, 72, 58, 59, 49, 5, 3, & 5
205222 Sh. 4, No. 1 & 2 Units Fire Protection P & ID, Revision 62
205236, No. 1 Unit Auxiliary Feedwater P & ID, Revision 58
205317 Shs. 1 & 2, No. 2 Unit Compressed Air, Revisions 27 & 22
205334 Sh. 3, No. 2 Unit Safety Injection P & ID, Revision 58
205336, No. 2 Unit Auxiliary Feedwater P & ID, Revision 51
205338 Sh. 2, No. 2 Reactor Containment Ventilation, Revision 28
205342 Sh. 4, No. 2 Unit Service Water Nuclear Area P & ID, Revision 61
205350, Salem No. 2 Unit ECCS Simplified P&ID, Revision 5
206767 Sh. 1, No. 1 Unit Reactor Containment Steam Generator Feedwater Piping, Revision 29
207498, Sh. 1, No. 1 & 2 Units Reactor Containment Penetrations, Revision 14
207905, No. 1 Unit 1C Service Water Intake 230V Vital Control Center One-Line, Revision 32
207909, No. 1 Unit Auxiliary Building 1C Diesel 230V Vital Control Center One-Line, Revision 23
207912, No. 1 Unit Auxiliary Building 1C West Valves & Misc. 230V Vital Control Center One-Line, Revision 45
207933, No. 1 Unit Penetration Area 1C East Valves & Misc. 230V Vital Control Center One-Line, Revision 37
207937, No. 1 Unit Penetration Area 1C Vent. 230V Vital Control Center One-Line, Revision 27
208985, No. 1 & 2 Units - Auxiliary Feed Storage Tanks - Nozzle Openings, Arrangement, Revision 4

223873, No. 1 Unit Yard Refueling Water Storage Tanks Panel 378, Revision 19
229044, No. 1 Reactor Containment Miscellaneous Piping at Penetration Sleeves, Revision 11
231448, No. 13 & 23 Aux. Feedwater Pump Logic Diagram, Revision 8
236819, No. 2 Reactor Containment Miscellaneous Piping at Penetration Sleeves, Revision 10
241010 Sh. 26, Unit 2 - Penetration Area Residual Heat Removal Safety Injection Pipe Hanger, Revision 13
600426, No. 2 Unit Auxiliary Feedwater Storage Tank Panel 802-2, Revision 4
601233, No. 1 Unit Auxiliary Bldg. Control Area 1C-460V Vital Bus One-Line, Revision 23
601243, No. 1 Unit Auxiliary Bldg. Control Area 1C-230V Vital Bus One-Line, Revision 22
613380 D, No. 1 Unit Safety Injection RWST High/Low Level 1LD9634, Revision 4
613381 D, No. 1 Unit Safety Injection Refueling Water Storage Tank Level 1LT920, Revision 3

Engineering Evaluations
60062743-030, 2MS132-AO Does Not Meet Flowscanner Test Acceptance Criteria Technical Evaluation, dated 4/23/08
70108334, Jar to Cover Electrolyte Weeping, dated 4/5/10
70119165, Evaluation of Excessive Gaps between Battery Cells and Restraints, dated 5/1/11
70123375, 125VDC Battery Cell Gaps Operability Evaluation, dated 4/30/11
70136590, Functional Failure of SSPS Slave Relay during Functional Test, dated 4/30/12
70138321, Unit 1 SSPS Train A Inadvertent SI and Reactor Scram, not dated
70141773, Abnormal SSPS Unit 2 Train A Functional Test Results, dated 9/19/12
70147637, B Reactor Trip Breaker As-Found Test Data out of Specifications, dated 12/11/12
70152091, NRC EIN 2013-05 Evaluation, dated 7/5/13
70156679, 1A Reactor Trip Bypass Breaker As-Found UVTA Force Degraded, dated 7/16/13
70158788, Re-Plan Maintenance of SSPS, dated 10/07/2013
70166935-030, 2P-SIG-007 (@2SJ13) As-Found Condition Technical Evaluation, dated 7/2/14
70167108-010, Unit 2 Auxiliary Feedwater Storage Tank Level Instrumentation Maintenance Rule Functional failure Cause Determination, dated 7/23/14
80064372, Containment Pressure Release Admin Limit Change to 1250 Hours Regulatory Change process Determination, dated 10/13/03
80107283, Temporary Configuration Change Package (SSPS Test Card), Revision 0
80112303-010, ASME IST RH8 Check Valves Technical Evaluation, dated 7/23/14
ACM 14-005, 12MS169/13MS171 Actuator Condensation Monitoring Plan, dated 7/9/14
CCP 80015125, 2SJ13 Margin Recovery, Revision 0
CCP 80099679, 2SJ13 Margin Recovery, Revision 1
DCN 10664, Aux Feed Storage Tank Anti-Vortex Plate, dated 10/25/74
ECA 80015125, Modify 2SJ12 and 2SJ13 Motor Operators, Revision 0
ECP 80071767, 1 & 2MS132 Replace Actuator Split Clamp, Revision 0
Evaluations: 70054295, 70075735, 70076359, 70083479, 70087651, 70092755, 70093229, 70103923, 70107563, 70117165, 70118474, 70118625, 70123438, 70126964, 70131901, 70136408, 70137177, 70137523, 70140564, 70141475, 70148348, 70150221, 70152676, 70156892, 70157607, 70159193, 70162174, 70167108, 70611404, 80090015, 80103269, 80104564

S-1-SJ-MEE-0446, In Service Inspection of RHR Pumps Baseline Reference and Acceptance Values Salem Generating Station, Revision 0
S2013-201, 50.59 Screening for DCP 80107665, Install Spectacle Flange and Replace 21 and 22SW161 Valve and Piping, Revision 0
SA-11-001, SSPS Slave Relay Surveillance Test Interval (STI) Evaluation Increase from 62 Days 18 Months, Revision 0
SA-STI-001, STI Extension of SSPS Slave Relay Testing, Revision 0
S-C-125-EEE-0402, Engineering Evaluation for the Maximum Allowable Voltage of the 125 VDC Control Power System for Salem Units 1 and 2, dated 3/15/90
S-C-125-EEE-1129, Engineering Evaluation of NRC Concerns Documented in PIRS 960515163, dated 11/96
SCN 13-013, UFSAR Change for the Installation of SW-AFW Spectacle Flange, dated 11/20/13
S-C-ZZ-EEE-0550-1, Verification for Selective Tripping of Primary and Backup Protective Devices on 125VDC Vital Buses, dated 12/6/91

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30118972	30193689	30263214	60075443	60103779
30122909	30195360	30265975	60075983	60104795
30172390	30195563	30266755	60079095	60105721
30180068	30195564	30266933	60079321	60107811
30180717	30213768	30268957	60086777	60107822
30182977	30213809	30269985	60096537	60110720
30186915	30249247	30267881	60096554	60114144
30187096	30255587	30271224	60097035	60115459
30188119	30257307	30272147	60098692	60116914
30192714	30257988	60036456	60102434	60117400
30192715	30258239	60043849	60102533	60118241

Miscellaneous

8705060212, Salem Generating Station Unit 1 LER 87-003-00, Containment Pressure/Vacuum Relief Valves Open Beyond 1000 Hour Limit Due to Procedural Inadequacy, dated 4/28/87
ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, Subsection ISTB Inservice Testing of Pumps in LWR Nuclear Power Plants, 2001
NEI 04-02, Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c), Revision 2
NFPA 70, National Electric Code, 2002 Edition
OP-AA-111-101-1001, Salem 1 Narrative Log, dated 7/11/14
Salem 2 (Modes 1-4) Containment Pressure-Vacuum Relief Inservice Time, 1/1/12 - 7/17/14
WCAP 13877, Reliability Assessment of Potter Brumfield MDR Relays, Revision 2
WCAP 13878-P-A, Reliability Assessment of Westinghouse Type AR Relays, Revision 2
WCAP 15376-P-A, Risk Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breakers Test and Completion Times, Revision 1
Work Clearance Document Nos. 4175978 & 4335894

Non Destructive Examinations
30170925, Salem Unit 1 RWST VT-3 Examination, performed 9/9/11
30192714, S1 AF-1AFE1 Ultrasonic Thickness Examination, performed 11/23/11
30195563, S1CVC-1SJE8 Ultrasonic Thickness Examination, performed 9/1/11
30195564, S2SJ-2SJE5 Ultrasonic Thickness Examination, performed 3/19/12
VT-11-577, SPT-1-BF-001 Visual Examination System Leakage (VT-2), performed 11/29/11
VT-11-578, SPT-1-BF-002 Visual Examination System Leakage (VT-2), performed 11/29/11
VT-11-579, SPT-1-BF-003 Visual Examination System Leakage (VT-2), performed 11/29/11
VT-11-580, SPT-1-BF-004 Visual Examination System Leakage (VT-2), performed 11/29/11

Normal and Special (Abnormal) Operations Procedures
1-EOP-APPX-7, Containment Sump Blockage Guideline, Revision 0
1-EOP-LOCA-3, Transfer to Cold Leg Recirculation, Revision 28
2-EOP-LOCA-1, Loss of Reactor Coolant, Revision 28
2-EOP-LOCA-2, Post LOCA Cooldown and Depressurization, Revision 25
2-EOP-LOCA-3, Transfer to Cold Leg Recirculation, Revision 29
S1.OP-SO.125-0005, 1A 125VDC Bus Operation, Revision 23
S1.OP-ST.SSP-0007, ESF Containment Isolation Phase A, Revision 10
S1.OP-ST.SSP-0009, ESF SSPS Slave Relays Test - Train A, Revision 37
S2.OP-AR.ZZ-0012, AFWST Approaching Tech Spec, Revision 36
S2.OP-SO.AF-0001, Auxiliary Feedwater System Operation, Revision 39
S2.OP-SO.CBV-0001, Containment Ventilation Operation, Revision 32
S2.OP-SO.CBV-0002, Containment Pressure - Vacuum Relief System Operation, Revision 18
S2.OP-SO.RHR-0002, Terminating RHR, Revision 20
S2.OP-ST.CAN-0001, Primary Containment Valves Monthly, Revision 12
S2.OP-ST.RHR-0002, IST 22 RHR Pump, Revision 31
S2.OP-ST.SJ-0003, Inservice Testing Safety Injection Vales Modes 1-6, Revision 12
S2.OP-ST.SSP-0003, SEC Mode Ops Testing 2B Vital Bus, Revision 41
S2.RA-ST.RHR-0001, IST 22 RHR Pump Acceptance Criteria, Revision 9
SC.OP-SO.4KV-0001, 4KV Breaker Operation, Revision 26

Operating Experience
NRC Information Notice 2007-34: Operating Experience Regarding Electrical Circuit Breakers, dated 10/22/07
NRC Information Notice 2008-18: Loss of a Safety-Related Motor Control Center Caused by a Bus Fault, dated 12/1/08
NRC Information Notice 2011-12: Reactor Trips resulting from Water Intrusion into Electrical Equipment, dated 6/16/11
NRC Information Notice 2012-14: Motor-Operated Valve Inoperable Due To Stem-Disc Separation, dated 7/24/12
NRC Information Notice 2012-16: Preconditioning of Pressure Switches before Surveillance Testing, dated 8/29/12

Operator Training
230/460VAC Electrical, Salem NEO Continuing Training Cycle, Revision 0
NOS05460VAC-07, 460/230VAC Electrical, Revision 0
NOS05CONTMT-11, Containment and Containment Support Systems Salem Lesson Plan, Revision 11

Preventive Maintenance and Inspections
S1.IC-CC.SJ-0173, 1LT-920 Refueling Water Storage Tank Level, performed 2/11/11 & 9/21/12
S1.IC-CC.SJ-0211, 1LT-921 Refueling Water Storage Tank Level, performed 2/25/10, 9/1/11, & 3/1/13
SC.1C-GP.ZZ-0003, General Instrument Calibration Procedure for Field Device, performed 4/11/05
SC.MD-EU.DG-0009, Astro-Med Dash 8N Recorder/Equipment Setup for EDG Related Surveillance Testing, performed 4/5/13
SC.MD-IS.4KV-0001, 4KV and 13KV Magne-Blast Circuit Breakers Inspection and Test, performed 2/6/13
SC.MD-PM.ZZ-0009, Miscellaneous Dry Type Power Transformer Maintenance, performed 5/4/13
SC.MD-PM.ZZ-0011, Miscellaneous Electrical Equipment Enclosure Preventive Maintenance, performed 8/27/08
SC.MD-PM.ZZ-0014, 230/460 ITE Switchgear and Breaker Enclosure Maintenance, performed 10/31/08 & 5/2/13
SC.MD-PM.ZZ-0018, AC Motor Cleaning and Inspection, performed 2/2/10
SC.MD-TR.4KV-0008, 4KV and 13KV Breaker Timing, performed 9/13/06
S-IR-6S0-0032, PTU-100-1, Structural & Component Monitoring Report, dated 1/20/14
S-IR-6S0-0032, PTU-100-2, Structural & Component Monitoring Report, dated 1/20/14
S-IR-6S0-0032, PTU-100-3, Structural & Component Monitoring Report, dated 1/20/14

Procedures
CMP-2CS-1, Containment Spray Pump Discharge Check Valves CM Plan (Unit 2), Revision 1
ER-AA-310-1009, Condition Monitoring of Structures, Revision 2
ER-AA-410-1000, Air Operated Valve Categorization, Revision 6
ER-AA-410-1002, Air Operated Valve Testing Requirements, Revision 5
ER-AA-2030, Conduct of Plant Engineering Manual, Revision 11
ER-SA-310-1009, Salem Generating Station - Maintenance Rule Scoping, Revision 4
LS.AA-120, Issue Identification and Screening Process, Revision 12
LS.AA-125, Corrective Action Program, Revision 17
MA-AA-734-461, Bolt Torquing and Bolting Sequence Guidelines, Revision 1
OP-SA-470-1001, Cyclic Data Monitoring Program, Revision 2
S1.IC-LC.SJ-0211, 1LT-921 Refueling Water Storage Tank Level, Revision 12
S1.IC-ST.SSP-0011, SSPS Trains B Reactor Trip Breaker UV Coil Test, Revision 27
S1.IC-ST.SSP-00014, Reactor Trip Breaker Operability Re-Test, Revision 2
S1.IC-TR.SSP-0001 Response Time of SSPS Logic - Reactor Trip and Safety Injection Train A, Revision 18
S1.IC-TR.SSP-0003, Response Time of SSPS Slave Relays, Train A, Revision 17
S1.IC-TR.ZZ-0002, Unit 1 Master Time Response [SSPS], Revision 22
S1.OP-AB.460-0003, Loss of 1C 460/230V Vital Bus, Revision 7
S1.OP-DL.ZZ-0003 Attachment 1, Control Room Log (Modes 1-4), Revision 72
S1.RA-IS.ZZ-0013, Reactor Containment Building Integrated Leak Rate Test, Revision 1

S2.OP-DL.ZZ-0003 Attachment 1, Control Room Log (Modes 1-4), Revision 97
S2.OP-TM.ZZ-0002, Tank Capacity Data, Revision 8
S2.OP-ST.RHR-0002, Inservice Testing - 22 Residual Heat Removal Pump, Revision 31
S2.OP-ST-SSP-0011, Engineered Safety Features Response Testing, Revision 22
S2.RA-ST.CH-0004, Inservice Testing Chilled Water System - Chillers Acceptance Criteria, Revision 5
SC.MD.CM-RHR-0002, Residual Heat Removal Motor Disassembly, Inspection, and Reassembly, Revision 2
SC.MD-IS.4KV-0001, 4KV and 13KV Magne-Blast Circuit Breakers Inspection and Test, Revision 28
SC.MD-PM.CH-0002, Chiller Condenser Heat Exchanger Internal Inspection and Leak Check, Revision 15
SC.MD-PM.RCP-0001, Reactor Trip Breaker Semi Annual Inspection, Lubrication and Testing, Revision 19
SC.MD.PM-SJ-0011, Emergency Core Cooling Containment Sump Inspection, Revision 5
SC.MD-PM.ZZ-0009, Miscellaneous Dry Type Power Transformer Maintenance, Revision 7
SC.MD-PM.ZZ-0010, Model 7700 and 8000 Line Motor Control Center Maintenance, Revision 28
SC.MD-PM.ZZ-0189, Disassembly, Inspection and Reassembly of C&S Butterfly Valves Mark # A-287, Revision 0
SC.MD-ST.125-0006, 125V Batteries 18 Month Service Test Using BCT-2000, Revision 3
SC.MD-ST.125-0007, Preventive Maintenance and 18 Month Surveillance of 125V Battery Chargers, Revision 8
SC.MD.ST-CAN-0005, Containment Sump Level Device (Float Device) Functional Check, Revision 3
SC.MD-ST.ZZ-0003, Inspection and Preventive Maintenance of Unit 1, 2 & 3 Batteries, Revision 33
SC.OP-SO.4KV-0001, 4KV Breaker Operation, Revision 26
SC.OP-SO.460-0001, 230/460V Breaker Operation, Revision 14
SH.IC-GP.ZZ-0002, Disassembly, Inspection, Reassembly and Testing of Masoneilan Model 37/38 Air Operated Actuators, Revision 9

Risk and Margin Management
Risk-Informed Inspection Notebook for Salem Generating Station, Revision 2.1a

System Health Reports & Trending
3022068, OP-SA-470-1001, Salem Generating Station Units 1 and 2, 2012 Annual Cyclic Data Report, Revision 0
3024690, OP-SA-470-1001, Salem Generating Station Units 1 and 2, 2013 Annual Cyclic Data Report, Revision 0
Air Operated Valve Program Health Report, P1-2014
Unit 1 125 VDC System Health Report, 1st QTR 2014
Unit 1 230 VAC VDC System Health Report, 1st QTR 2014
Unit 1 Auxiliary Feedwater System Health Report, 1st QTR 2014
Unit 1 Rod Control System Health Report, 1st QTR 2014
Unit 1 Safety Injection System Health Report, 1st QTR 2014

Unit 2 Auxiliary Feedwater System Health Report, 1st QTR 2014
Unit 2 Chilled Water System Health Report, 1st QTR 2014
Unit 2 Containment Ventilation System Health Report, 1st QTR 2014
Unit 2 Residual Heat Removal System Health Report, 1st QTR 2014
Unit 2 Rod Control System Health Report, 1st QTR 2014
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127877, GE Switchgear Vendor Manual, Revision 1
134262, Chilled Water Circulating Water Pumps, Revision 15
301155, Solid State Protection System, Revision 23
309448, C&D Battery Installation and Operating Instructions, Revision 9
313376, Maintenance Program Manual for Westinghouse Safety Related Type DB Circuit Breakers and Associated Switchgear, Revision 1
317537, Procedure for the Maintenance and Overhaul of GE Magne-Blast Type AM-4.16-350-1 Circuit Breakers, Revision 1
320358, Installation, Operation and Maintenance Manual for the C&S Tricentric Stop Valve, Revision 4
323585, Salem Unit 1 RWST Draindown and Cold Leg Recirculation, Revision 1
325458, Direct-Expansion Evaporators Vendor Manual, Revision 1
902007, Seismic Qualification Report of 125 Volt LCR-33 Batteries and 2-Step Battery Racks, Revision 1
RS-1476, Standby Battery [C&D] Vented Cell Installation and Operating Instructions, Revision 2
System Description SD-M946, Public Service Electric and Gas Company Engineering and Construction Department, Salem Nuclear Generating Station, Nos. 1 and 2 Units, Containment Penetration Cooling, November 1973
VTD 140310, Velan Drawing of 2SJ13, Revision 4
VTD 3170999(26) SR-7093, Velan Seismic Report for 4” Class 1500 Forged Stainless Steel Bolted Bonnet Motor Operated Gate Valves, dated 2/3/93
VTD 320802, MPR-1693 Review for NRC GL-95-07 Power Operated Gate Valves Susceptibility to Thermal Binding and Pressure Locking, Revision 1
VTD 324103, Masoneilan Drawing of MS132, dated 12/15/98

LIST OF ACRONYMS

ADAMS	Agency-Wide Documents Access and Management System
AFW	Auxiliary Feedwater
AFWST	Auxiliary Feedwater Storage Tank
AOV	Air Operated Valve
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCW	Component Cooling Water
CDBI	Component Design Bases Inspection
CFR	Code of Federal Regulations
DBD	Design Basis Document
DC	Direct Current
DRS	Division of Reactor Safety
ECCS	Emergency Core Cooling System
EOP	Emergency Operating Procedure
GL	Generic Letter
HX	Heat Exchanger
IMC	Inspection Manual Chapter
IN	Information Notice
IP	Inspection Procedure
IST	In-Service Test
LER	Licensee Event Report
LERF	Large Early Release Frequency
MCC	Motor Control Center
MOV	Motor Operated Valve
MR	Maintenance Rule
NCV	Non-Cited Violation
NOTF	Notification
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
OE	Operating Experience
P&ID	Piping and Instrument Diagram
PM	Preventive Maintenance
PRIB	Plant Risk Information e-Book
PSA	Probabilistic Safety Assessment
PSEG	Public Service Enterprise Group Nuclear LLC
RAW	Risk Achievement Worth
RHR	Residual Heat Removal
RRW	Risk Reduction Worth
RTB	Reactor Trip Breaker
RWST	Refueling Water Storage Tank
SBO	Station Blackout
SI	Safety Injection
SPAR	Standardized Plant Analysis Risk
SSC	Structure, System, and Component
SSPS	Solid State Protection System
ST	Surveillance Test

SW	Service Water
TDAFW	Turbine Driven Auxiliary Feedwater
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report