



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

August 26, 2013

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

**SUBJECT: SALEM NUCLEAR GENERATING STATION UNIT NOS. 1 AND 2 –
NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION
REPORT 05000272/2013008 AND 05000311/2013008**

Dear Mr. Joyce:

On August 1, 2013, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Salem Nuclear Generating Station, Unit Numbers 1 and 2. The enclosed report documents the inspection results, which were discussed on August 1 with John F. Perry, Site Vice President, and other members of your staff.

This inspection examined activities conducted under your license as they relate to identification and resolution of problems and compliance with the Commission's rules and regulations and conditions of your license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel.

Based on the samples selected for review, the inspectors concluded that PSEG was generally effective in identifying, evaluating, and resolving problems. PSEG personnel identified problems and entered them into the corrective action program at a low threshold. PSEG prioritized and evaluated issues commensurate with the safety significance of the problems and corrective actions were generally implemented in a timely manner.

This report documents one self-revealing and one NRC-identified finding each of very low safety significance (Green). One of these findings was determined to be a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Salem Nuclear

Generating Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response, within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Salem Nuclear Generating Station.

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 public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document 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/

Glenn T. Dentel, Chief
Reactor Projects Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000272/2013008 and 05000311/2013008
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.: 50-272, 50-311

License Nos.: DPR-70, DPR-75

Report Nos.: 05000272/2013008 and 05000311/2013008

Licensee: PSEG Nuclear LLC (PSEG)

Facility: Salem Nuclear Generating Station Units 1 and 2

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

Dates: July 15 through July 19, 2013
July 29 through August 1, 2013

Team Leader: Steve Shaffer, Senior Project Engineer

Inspectors: Phil McKenna, Resident Inspector
Joe DeBoer, Project Engineer
Stephanie Galbreath, Reactor Engineer

Approved by: Glenn T. Dentel, Chief
Reactor Projects Branch 3
Division of Reactor Projects

SUMMARY

IR 05000272/2013008 and 05000311/2013008; July 15 through August 1, 2013, Salem Nuclear Generating Station; Biennial Baseline Inspection of Problem Identification and Resolution. The inspectors identified one finding in the area of effectiveness of problem identification and one finding in the area of effectiveness of corrective actions.

This NRC team inspection was performed by three regional inspectors and one resident inspector. The report documents two findings of very low safety significance (Green) identified during this inspection and classifies one of these findings as a non-cited violation. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Problem Identification and Resolution

The inspectors concluded that PSEG was generally effective in identifying, evaluating, and resolving problems. PSEG personnel identified problems, entered them into the corrective action program at a low threshold, and prioritized issues commensurate with their safety significance. In most cases, PSEG appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address the problems identified in the corrective action program in a timely manner. However, the inspectors identified one violation of NRC requirements and one finding, one in the area of effectiveness of problem identification and one in the area of effectiveness of corrective actions.

The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations. In addition, based on those items selected for review, the inspectors determined that PSEG self-assessments and audits were thorough.

Based on the interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual corrective action program and employee concerns program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues nor did they identify any conditions that could have had a negative impact on the site's safety conscious work environment.

Cornerstone: Initiating Events

- Green. The inspectors identified a Green finding (FIN) for PSEG's failure to evaluate the performance deficiency documented for FIN 2011004-02 in accordance with procedure LS-AA-1003, "NRC Inspection Preparation and Response." Specifically, PSEG failed to initiate a notification to review FIN 2011004-02 and develop appropriate corrective actions. The original finding, FIN 201100402, was associated with untimely corrective actions for degraded reactor coolant pump motor cables. In addition to not addressing the performance

deficiency, the failure to initiate a notification creates the potential for future untimely corrective actions in similar cases. This issue was entered into PSEG's corrective action program as notification 20616485.

This finding is more than minor because if left uncorrected the issue has the potential to lead to a more significant safety concern. Specifically, PSEG has not corrected the performance deficiency which resulted in untimely corrective actions with regards to FIN 2011004-02. If similar untimely corrective actions were taken on a safety system this could result in a more significant safety concern. 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, this finding is of very low safety significance (Green) because it did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event and did not affect mitigation equipment. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not completely and accurately identify the issue for FIN 2011004-02. Specifically, PSEG did not initiate a notification to review FIN 2011004-02 to ensure corrective actions properly address the finding. [P.1(a)]

Cornerstone: Mitigating Systems

- Green. A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified because PSEG did not complete a change to a preventative maintenance requirement for the Switchgear and Penetration Area Ventilation (SPAV) fan motors in accordance with PSEG procedure MA-AA-716-210-1005, "Predefine Change Processing." PSEG failed to perform an adequate engineering review of the Preventative Maintenance Change Request (PMCR) when bearing replacements were deleted from the SPAV fan motor maintenance plans in September, 2009. This resulted in the bearing not being lubricated and subsequent failure of the 13 SPAV supply fan motor on February 4, 2013. PSEG entered the issue into the corrective action program as notification 20594424.

The inspectors determined that the performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because PSEG failed to investigate a difference in bearing type documented in a 1998 NRC commitment letter and the SPAV fan motor material master, they did not resolve conflicting information on the type of bearing installed in the SPAV fan motors before a preventive maintenance change to delete periodic bearing replacements took effect. This resulted in bearing and fan motor failure. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations" (IMC 0609A). The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification; did not represent a loss of system safety function; did not screen as potentially risk significant due to external initiating events; and SPAV fans are not designated as high safety-significance in the licensee's maintenance rule program. There is no cross-cutting aspect assigned because the performance deficiency is not indicative of current performance. Specifically, the performance deficiency involves an issue that occurred greater than three years ago and is not indicative of current performance.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152B)

This inspection constitutes one biennial sample of problem identification and resolution as defined by Inspection Procedure 71152. All documents reviewed during this inspection are listed in the Attachment to this report.

.1 Assessment of Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed the procedures that described PSEG corrective action program at Salem. To assess the effectiveness of the corrective action program, the inspectors reviewed performance in three primary areas: problem identification, prioritization and evaluation of issues, and corrective action implementation. The inspectors compared performance in these areas to the requirements and standards contained in 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," and PSEG procedure LS-AA-125, "Corrective Action Program." For each of these areas, the inspectors considered risk insights from the station's risk analysis and reviewed notifications selected across the seven cornerstones of safety in the NRCs Reactor Oversight Process. Additionally, the inspectors attended multiple Plan-of-the-Day, Station Ownership Committee, and Management Review Committee meetings. The inspectors selected items from the following functional areas for review: engineering, operations, maintenance, emergency preparedness, radiation protection, chemistry, physical security, and oversight programs.

(1) Effectiveness of Problem Identification

In addition to the items described above, the inspectors reviewed system health reports, a sample of completed corrective and preventative maintenance work orders, completed surveillance test procedures, operator logs, and periodic trend reports. The inspectors also completed field walkdowns of various systems on site, such as the charging system, safety injection system, emergency diesel generators and the intake structure. Additionally, the inspectors reviewed a sample of notifications written to document issues identified through internal self-assessments, audits, emergency preparedness drills, and the operating experience program. The inspectors completed this review to verify that PSEG entered conditions adverse to quality into their corrective action program as appropriate.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors reviewed the evaluation and prioritization of a sample of notifications issued since the last NRC biennial Problem Identification and Resolution inspection completed in July 2011. The inspectors also reviewed notifications that were assigned lower levels of significance that did not include formal cause evaluations to ensure that they were properly classified. The inspectors' review included the appropriateness of the assigned significance, the scope and depth of the causal analysis, and the timeliness of resolution. The inspectors assessed whether the evaluations identified likely causes for the issues and developed appropriate corrective actions to address the identified

causes. Further, the inspectors reviewed equipment operability determinations, reportability assessments, and extent-of-condition reviews for selected problems to verify these processes adequately addressed equipment operability, reporting of issues to the NRC, and the extent of the issues.

(3) Effectiveness of Corrective Actions

The inspectors reviewed PSEG's completed corrective actions through documentation review and, in some cases, field walkdowns to determine whether the actions addressed the identified causes of the problems. The inspectors also reviewed notifications for adverse trends and repetitive problems to determine whether corrective actions were effective in addressing the broader issues. The inspectors reviewed PSEG's timeliness in implementing corrective actions and effectiveness in precluding recurrence for significant conditions adverse to quality. The inspectors also reviewed a sample of notifications associated with selected non-cited violations and findings to verify that PSEG personnel properly evaluated and resolved these issues. In addition, the inspectors expanded the corrective action review to five years to evaluate PSEG actions related to the component cooling water system.

b. Assessment

(1) Effectiveness of Problem Identification

Based on the selected samples, plant walkdowns, and interviews of site personnel in multiple functional areas, the inspectors determined that PSEG typically identified problems and entered them into the corrective action program at a low threshold. PSEG staff at Salem initiated approximately 36,000 notifications between July 2011 and July 2013. The inspectors observed supervisors at the Plan-of-the-Day, Station Ownership Committee, and Management Review Committee meetings appropriately questioning and challenging condition reports to ensure clarification of the issues. Based on the samples reviewed, the inspectors determined that PSEG trended equipment and programmatic issues, and appropriately identified problems in notifications. The inspectors verified that conditions adverse to quality identified through this review were entered into the corrective action program as appropriate. Additionally, inspectors concluded that personnel were identifying trends at low levels. In general, inspectors did not identify any issues or concerns that had not been appropriately entered into the corrective action program for evaluation and resolution. In response to several questions and minor equipment observations identified by the inspectors during plant walkdowns, PSEG personnel promptly initiated notifications and/or took immediate action to address the issues.

However, the inspectors identified one example of more than minor significance where Salem personnel were not effective in problem identification. This finding is documented in Section 4OA2.1.c.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors determined that, in general, PSEG appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. PSEG screened notifications for operability and reportability, categorized the notifications by significance, and assigned actions to the appropriate department for

evaluation and resolution. The notification screening process considered human performance issues, radiological safety concerns, repetitiveness, adverse trends, and potential impact on the safety conscious work environment.

Based on the sample of notifications reviewed, the inspectors noted that the guidance provided by PSEG's corrective action program implementing procedures was sufficient to ensure consistency in categorization of issues. Operability and reportability determinations were generally performed when conditions warranted and in most cases, the evaluations supported the conclusion. Causal analyses appropriately considered the extent of condition or problem, generic issues, and previous occurrences of the issue.

However, the inspectors identified one example of more than minor significance where Salem personnel were not effective in prioritization and evaluation. This finding is documented in Section 4OA2.1.c.

(3) Effectiveness of Corrective Actions

The inspectors concluded that corrective actions for identified deficiencies were generally timely and adequately implemented. For significant conditions adverse to quality, PSEG identified actions to prevent recurrence. The inspectors concluded that most corrective actions to address the sample of NRC non-cited violations and findings since the last problem identification and resolution inspection were timely and effective with one exception documented below.

c. Findings

(1) Failure to Evaluate Performance Deficiency for FIN 2011004-02

Introduction. The inspectors identified a Green Finding (FIN) for PSEG's failure to adequately evaluate the performance deficiency for NRC FIN 2011004-02. Specifically, PSEG failed to initiate a notification to review FIN 2011004-02 and develop appropriate corrective actions per procedure LS-AA-1003, "NRC Inspection Preparation and Response." The original finding, FIN 201100402, was associated with untimely corrective actions for degraded reactor coolant pump motor cables. In addition to not addressing the performance deficiency, the failure to initiate a notification creates the potential for future untimely corrective actions in similar cases.

Description. On November 9, 2011, PSEG was issued a Green self-revealing finding (FIN 2011004-02) because PSEG did not ensure long-term corrective action options for the reactor coolant pump motor lead cables were completed timely and effectively in accordance with their corrective action program procedure (see NRC Inspection report 05000272,311/2011004). As part of the biennial Problem Identification and Resolution inspection (71152B), inspectors reviewed corrective actions taken in response to past NRC findings and violations. The inspectors identified that PSEG had not written a notification to address the performance deficiency for FIN 2011004-02.

PSEG procedure LS-AA-1003, "NRC Inspection Preparation and Response," Step 4.3.2, states once the inspection report is issued, a notification is required to be generated. During the licensee focused area self-assessment conducted in preparation for this inspection, PSEG identified that contrary to procedure, no notifications were written for FIN 2011004-02, and initiated notification 20608327. Inspectors reviewed the

notification and determined that the licensee recommended no corrective actions and closed the notification to trend. The inspector's added value by identifying the performance deficiency for FIN 2011004-02 was still not evaluated and therefore no corrective actions have been taken. The intent of LS-AA-1003 is to ensure that station response and corrective actions properly address all findings and/or violations. PSEG did not take corrective actions to properly address FIN 2011004-02 and did not meet procedure LS-AA-1003. PSEG initiated notification 20616485 to address the concern.

Analysis. The inspectors determined that PSEG's failure to evaluate the performance deficiency from FIN 2011004-02 was a new performance deficiency that was within PSEG's ability to foresee and correct. This performance deficiency is more than minor because if left uncorrected the issue has the potential to lead to a more significant safety concern. Specifically, PSEG has not corrected the performance deficiency which resulted in untimely corrective actions with regards to FIN 2011004-02. If untimely corrective actions were taken in a similar issue which involved a safety system, this could result in a more significant safety concern. 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 inspectors determined that this finding is of very low safety significance (Green) because it did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event and did not affect mitigation equipment.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not completely and accurately identify the issue for FIN 2011004-02. Specifically, PSEG did not initiate a notification to review FIN 2011004-02 to ensure corrective actions properly address the finding. [P.1(a)]

Enforcement. This finding does not involve enforcement action because no violation of a regulatory requirement was identified. Since this finding does not involve a violation and is of very low safety significance, it is identified as a FIN [05000311/2013008-01],

Failure to Evaluate Performance Deficiency for an NRC finding.

(2) 13 Switchgear and Penetration Area Ventilation Supply Fan Motor Bearing Failure

Introduction. A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified because PSEG did not complete a change to a preventative maintenance requirement for the SPAV fan motors in accordance with PSEG procedure MA-AA-716-210-1005, "Predefine Change Processing." PSEG failed to perform an adequate engineering review of the PMCR when bearing replacements were deleted from the SPAV fan motor maintenance plans in September, 2009. This resulted in the bearing not being lubricated and subsequent failure of the 13 SPAV supply fan motor on February 4, 2013.

Description. The function of the SPAV fans is to supply the switchgear and penetration areas of the plant, including safety-related switchgear, with cool, filtered air during all modes of operation. On February 4, 2013, at 12:25 pm, the 13 SPAV supply fan was discovered in a stopped condition by the control room operator. At the time of the discovery, the 12 SPAV supply fan was being restored to service after maintenance. With the two SPAV supply fans out of service, the probability risk analysis (PRA) was calculated as red by the shift manager. It was later determined that the 13 SPAV fan

had tripped between 8:00 and 8:30 am on February 4, 2013, based on a main control room board walkdown by the nuclear control operator (NCO) who had validated the 13 SPAV fan in service during the morning board walkdown. Further evaluation by the Salem PRA engineer concluded that PRA was yellow primarily based on the actual time that the 12 and 13 SPAV fans were out of service. The 12 SPAV supply fan was returned to service at 12:30 pm on February 4, 2013. The 13 SPAV supply fan was repaired and returned to service on February 15, 2013. PSEG entered the issue into the corrective action program as notification 20594424.

PSEG investigated the cause of the failed fan motor and found that the installed bearing was different than the bearing on the material master for the fan motor. The installed bearing was an open bearing instead of a double shielded bearing as listed on the material master. Double shielding bearings do not require any lubrication per PSEG's lubrication plan, so no lubrication was specified for the SPAV fan motor bearings. Since the bearing was open, the grease eventually expelled from the bearing and caused a direct failure.

In 1995, PSEG conducted a controlled shutdown of Salem Unit 1 due to simultaneous failures of the 12 and 13 SPAV supply fans. During the investigation of this issue, PSEG determined that a contributing factor to the SPAV fan failures was a lack of a preventative maintenance program for the fan motors. The LER submitted for this event committed to implement recurring preventative maintenance tasks to replace the SPAV fan motors on a regular schedule as would be appropriate for double shielded bearings. In a 1998 "Summary of Revised Regulatory Commitments" letter to the NRC, PSEG discussed that the SPAV fan motors were replaced with new motors fitted with open/single shielded bearings and that the preventative maintenance requirements were determined to be periodic lubrication and vibration monitoring.

PSEG completed an apparent cause evaluation (ACE) 70149975 on March 7, 2013, and determined that a preventative maintenance scope change in 2009 to delete motor bearing replacement was implemented before supporting predictive technologies were fully implemented and validated. PSEG had planned to conduct online Baker Box testing in addition to the already occurring vibration monitoring of the motor bearings. PSEG also concluded that inadequate vibration data collection was an apparent cause of the bearing failure. The vibration monitoring points on the 13 SPAV fan motor were improperly placed such that they allowed the warning signs of the bearing failure to go undetected. PSEG could not determine how the bearing replacement preventative maintenance was deleted from the SPAV motor maintenance plans, but assumed that it was during the timeframe that the material master for the SPAV motors was changed to show double shielded bearings were installed.

The inspectors reviewed how the PMCR to remove the bearing replacement from the maintenance plan was implemented. PSEG procedure MA-AA-716-210-1005, "Predefine Change Processing" discusses the procedure for the deletion of existing preventative maintenance. Step 5 of Attachment 3 of this procedure is the engineering review of a PMCR that involves critical components. The purpose of this section is to ensure adequate technical rigor is applied in the PMCR process by reviewing all of the applicable data from various source documents that can affect the preventative maintenance scope or frequency. Step 5.E of the procedure requires review of the applicable commitments and industry documents. In the case of the SPAV fan motors it was not noted that there was conflicting information between the type of bearing PSEG

had committed to in their 1998 commitment letter and the type of bearing listed on the material master. As part of the corrective action for the difference in bearing types on the material master, PSEG has corrected the material master for SPAV fan motors to require single shielded bearings.

Analysis. The inspectors concluded that the failure of PSEG to complete an adequate engineering review on the PMCR which deleted the bearing replacement requirement for the SPAV fan motors was a performance deficiency and was within PSEG's ability to foresee and correct. The inspectors determined that the performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because PSEG failed to investigate a difference in bearing type documented in the 1998 NRC commitment letter and the SPAV fan motor material master, they did not resolve conflicting information on the type of bearing installed in the SPAV fan motors before a preventive maintenance change to delete periodic bearing replacements took effect. This resulted in bearing and fan motor failure.

The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations" (IMC 0609A). The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification; did not represent a loss of system safety function; did not screen as potentially risk significant due to external initiating events; and SPAV fans are not designated as high safety-significance in the licensee's maintenance rule program.

There is no cross-cutting aspect assigned because the performance deficiency is not indicative of current performance. Specifically, the performance deficiency involves an issue that occurred greater than three years ago and is not indicative of current performance.

Enforcement. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires in part, that activities affecting quality shall be prescribed by documented instructions, procedures, and drawings and shall be accomplished in accordance with these instructions, procedures and drawings. Procedure MA-AA-716-210-1005, "Predefine Change Processing," Step 5.E, requires review of the applicable commitments and industry documents. Contrary to the above, PSEG did not accomplish a change to a preventative maintenance requirement for the SPAV fan motors in accordance with step 5.E of procedure MA-AA-716-210-1005, "Predefine Change Processing." Specifically, PSEG failed to investigate a difference in bearing type documented in their 1998 NRC commitment letter as required by "Predefine Change Processing" when conducting an engineering review of a PMCR for a critical component. As a result, the existence of conflicting information on what type of bearing was installed in the SPAV fan motors was not resolved and the preventative maintenance item of changing out the SPAV fan motor bearings was deleted which would have caught the degraded condition of the 13 SPAV fan motor before the motor failed in February, 2013. Because this issue is of very low safety significance (Green) and PSEG entered the issue into the corrective action program as notification 20594424, this violation is being

treated as an NCV consistent with the NRC Enforcement Policy. **NCV [05000272/2013008-02,] 13 Switchgear and Penetration Area Ventilation Supply Fan Motor Bearing Failure due to Deletion of Preventative Maintenance Requirement**

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed a sample of notifications associated with review of industry operating experience to determine whether PSEG appropriately evaluated the operating experience information for applicability to Salem and had taken appropriate actions, when warranted. The inspectors also reviewed evaluations of operating experience documents associated with a sample of NRC generic communications to ensure that PSEG adequately considered the underlying problems associated with the issues for resolution via their corrective action program. In addition, the inspectors observed various plant activities to determine if the station considered industry operating experience during the performance of routine and infrequently performed activities.

b. Assessment

The inspectors determined that PSEG appropriately considered industry operating experience information for applicability, and used the information for corrective and preventive actions to identify and prevent similar issues when appropriate. The inspectors determined that operating experience was appropriately applied and lessons learned were communicated and incorporated into plant operations and procedures when applicable. The inspectors also observed that industry operating experience was routinely discussed and considered during the conduct of Plan-of-the-Day meetings and pre-job briefs.

c. Findings

No findings were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed a sample of audits, including the most recent audit of the corrective action program, departmental self-assessments, and assessments performed by independent organizations. Inspectors performed these reviews to determine if PSEG entered problems identified through these assessments into the corrective action program, when appropriate, and whether PSEG initiated corrective actions to address identified deficiencies. The inspectors evaluated the effectiveness of the audits and assessments by comparing audit and assessment results against self-revealing and NRC-identified observations made during the inspection.

b. Assessment

The inspectors concluded that self-assessments, audits, and other internal PSEG assessments were generally critical, thorough, and effective in identifying issues. The

inspectors observed that PSEG personnel were knowledgeable in the subject and completed these audits and self-assessments in a methodical manner. PSEG completed these audits and self-assessments to a sufficient depth to identify issues which were then entered into the corrective action program for evaluation. In general, the station implemented corrective actions associated with the identified issues commensurate with their safety significance.

c. Findings

No findings were identified.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

During interviews with station personnel, the inspectors assessed the safety conscious work environment at Salem. Specifically, the inspectors interviewed personnel to determine whether they were hesitant to raise safety concerns to their management and/or the NRC. The inspectors also interviewed the station Employee Concerns Program coordinator to determine what actions are implemented to ensure employees were aware of the program and its availability with regards to raising safety concerns. The inspectors reviewed the Employee Concerns Program files to ensure that PSEG entered issues into the corrective action program when appropriate.

b. Assessment

During interviews, Salem staff expressed a willingness to use the corrective action program to identify plant issues and deficiencies and stated that they were willing to raise safety issues. The inspectors noted that no one interviewed stated that they personally experienced or were aware of a situation in which an individual had been retaliated against for raising a safety issue. All persons interviewed demonstrated an adequate knowledge of the corrective action program and the Employee Concerns Program. Based on these limited interviews, the inspectors concluded that there was no evidence of an unacceptable safety conscious work environment and no significant challenges to the free flow of information.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On August 1, 2013, the inspectors presented the inspection results to John F. Perry, Site Vice President and other members of the Salem staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

Enclosure

SUPPLEMENTARY INFORMATION**KEY POINTS OF CONTACT**Licensee Personnel

T. Cachaza, Regulatory Assurance
 K. Coville, Performance Improvement Manager
 J. Garecht, Work Management Manager
 K. Grover, Engineering Director
 K. King, Design Engineering
 B. Ohmert, Component Maintenance Optimization Engineer
 J. Perry, Site VP
 D. Price, Maintenance Superintendent
 D. Raymond, Nuclear Equipment Operator
 G. Rich, Chemistry Engineer
 B. Rivel, Nuclear Equipment Operator
 B. Stewart, Senior Reactor Operator
 S. Swenson, Manager Plant Engineering
 L. Wagner, Plant Manager
 R. Wegner, Maintenance

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATEDOpened and Closed

05000311/2013008-01	FIN	Failure to Evaluate Performance Deficiency for FIN 2011004-02
05000272/2013008-02	NCV	13 Switchgear and Penetration Area Ventilation Supply Fan Motor Bearing Failure due to Deletion of Preventative Maintenance Requirement

LIST OF DOCUMENTS REVIEWED**Section 40A2: Problem Identification and Resolution**Audits and Self-Assessments

70116493	Standards Enforcement Effectiveness Review, 05/25/2011
70121463	Buried Pipe Program Focused Area Self Assessment
70121784	Environmental Qualification (EQ) Focused Area Self-Assessment, 2011
70123618	Troubleshooting Process, 12/06/2011
70124282	Rx Start-up Terminated Due to Incorrect SSPS Circuit Retest, 05/06/11
70129359	CAP Knowledge
70129656	Electrical Maintenance Training Performance Effectiveness Review, 01/13/2013
70131686	Safety Conscious Work Environment-Salem, November 18, 2013
70131788	Work Management Process Execution, FASA, 05/29/2012
70132443	Operational and Technical Decision Making (OTDM) Process Check-in Self
70132452	Salem MOV Program FASA

70133091 CAP Effectiveness
 70136860 Housekeeping Process Implementation CISA, 07/25/12
 70137949 Unit 2 Unwarranted Inward Control Rod Motion during 22 Tave Channel
 70140924 Procedure and Work Instruction Use and Adherence Potential Cross-Cutting
 Issue, August 19, 2013
 70146398 Operations Human Performance Self Assessment, 02/11/13
 70149509 Control Room Supervision Check-In Self Assessment
 70149514 Achieving Excellence in Transformer, Switchyard, and Grid (TSG)
 70149639 Problem Identification and Resolution (PI&R) FASA
 80109030 Corrective Action Program Audit Report, June 19, 2013
 Nuclear Safety Culture Assessment, Public Service Enterprise Group (PSEG), Salem Nuclear
 Generating Station, January 2013
 Reliability Check-in Self Assessment

Notifications

20225621	20519335	20547302	20585172
20351724	20521633	20549396	20585547
20352527	20521806	20550105	20587434
20364024	20521897	20551236	20587716
20370137	20522347	20551826	20588323
20378874	20522574	20552082	20588377
20393652	20522782	20553054	20588467
20428288	20522941	20554018	20588632
20438980	20523114	20554250	20589481
20446889	20523166	20554767	20591139
20463639	20523850	20556502	20592250
20465141	20523948	20556962	20593669
20467020	20524135	20557259	20594424
20468664	20524370	20557491	20594787
20481560	20524405	20557888	20596394
20483436	20524470	20558111	20596577
20487033	20524513	20559464	20596578
20503254	20524551	20559642	20600444
20503779	20524584	20561593	20600473
20508589	20525147	20562154	20600619
20510377	20525519	20564070	20604753
20512832	20525612	20564432	20606318
20516267	20527578	20566693	20606883
20516658	20529218	20568668	20607945
20516793	20530469	20568796	20608327
20516803	20533842	20569519	20608343
20516975	20535209	20569760	20611436
20517488	20535540	20573416	20614929
20518000	20535619	20573606	20615383
20518004	20535792	20574175	20616015
20518006	20538032	20580318	20616131
20518078	20539265	20580523	20616301
20518249	20541697	20581402	20616347
20518713	20547178	20581479	20616485

Cause Evaluations

70085528 Determine Dunco Relay Maintenance Frequency ACIT, 09/30/2009
70116493 Salem Organizational Effectiveness RCE, 01/06/2011
70119080 1B 28VDC Missed Battery Surveillance ACE, 03/23/2011
70120968 2011 Service Water Grassing Events
70120968 2011 Service Water Grassing Events, Revision 2
70121431 Small CREACS Joint Tear WGE, 06/13/2011
70122594 Fuse Block Removed by Vendor Results in Extension of 72 hr LCO ACE,
06/04/2011
70125691 Unit 2 Reactor Trip on 23 RCP Trip RCE, 07/14/2011
70126272 2SJ10 failed leak tightness test ACE, 07/25/2011
70126627 EP Call Timeliness ACE, 9/23/2011
70126635 DC 125 – Low Specific Gravity vs. AVG. ACIT, 04/20/2012
70128209 Missing Labeling on ICAs ACIT, 08/24/2011
70128332 Re-evaluate high lift set in 2R18 ACE, 10/21/2011
70128333 Failure to meet ASME OM Code Mandatory Appendix I-7460(d) ACE,
04/22/2011
70128413 (a)(1) Determination #23 RCP Motor, 03/08/2013
70129261 12SW383 Failed to Respond to air demand ACE, 09/29/2011
70129656 Electrical Maintenance Training Performance, 01/06/2012
70130295 13 AFW Pump Inoperability – Human Performance Related ACE, 11/28/2011
70132079 Turbine Trip during VR Testing ACIT, 01/11/2012
70132080 Control Bank D > 12 steps from demand ACIT, 02/15/2013
70132335 Potential Negative Trend for Maintenance in Configuration Control CCE,
12/07/2011
70136190 13 Service Water Strainer Trip Results in Salem Unit 1 Entry 72 hour Shutdown
LCO ACE, 03/13/2012
70136205 INPO IER 12-16 Relay Related Problems, 05/01/2012
70136859 #22 Reactor Coolant Loop Delta T procedure revision ACIT, 06/20/2013
70138388 U1 RX Trip and Safety Injection RCE, 09/11/2012
70140618 23AFW F21V Open with Zero Demand RCE, 09/04/2012
70143402 12B Tube Leak Affecting Plant Chemistry ACE, 01/16/2013
70143412 12 Condensate Pump Sodium High ACE, 01/16/2013
70146562 Salem Unit 2 Reactor Trip RCE, 11/30/2012
70146564 21B Circulator Waterbox leak – Sodium Excursion During Start-up, 03/15/13
70147550 NOS Escalation Chemistry Procedure Use and Adherence ACE, 01/30/2013
70148452 Abnormal Entered due to loss of #4 Station Power Transformer ACE,
70149975 13 Control Area Vent Switchgear Room Supply Fane Motor Failure ACE,
06/24/2013
70149976 Switchgear and Penetration Area Ventilation Risk Assessment WGE, 03/07/2013
70149977 13 SGWR Supply Fan Failure Not Discovered WGE, 03/07/2013
70153853 Response to Anonymous Notification, 06/18/2013
70154315 15 CFCU No Service Water Flow, 08/05/2013
70155209 Response to Anonymous Notification, 04/18/2013

Operating Experience

20524588 NRC Information Notice 2011-15, Steel Containment Degradation and
Associated License Renewal Aging Management Issues
20525992 Operating Experience, EDG Inoperable due to Jacket Water Pump Seal
20549756 Operating Experience, Flow-accelerated Corrosion (FAC) Inspection Plan
20600693 NRC Information Notice 2013-05, Battery Expected Life and Its Potential Impact
on Surveillance Requirements

- 20615551 NRC Information Notice 2013-02, Issues Potentially Affecting Nuclear Facility Fire Safety
- 70126964 NRC Information Notice 2011-12, Reactor Trips Resulting From Water Intrusion Into Electrical Equipment
- 70132884 NRC Information Notice 2011-20, Concrete Degradation by Alkali-Silica Reaction
- 70138574 NRC Information Notice 2012-05, Abnormal Releases of Radioactive Material in Liquids Potentially Resulting in Groundwater Contamination
- 70139603 NRC Information Notice 2012-04, Impacts on Normal Plant Operations Due to Leaks or Spills of Chemicals
- 70152088 NRC Information Notice 2013-06, Corrosion in Fire Protection Piping Due to Air and Water Interaction
- 70152091 NRC Information Notice 2013-05, Battery Expected Life and Its Potential Impact on Surveillance Requirements

Non-Cited Violations and Findings

- 05000272 & 05000311/2011405-01 Violations of 10 CFR 74.19 for failure to perform physical inventories
- 05000272 & 05000311/2011009-01 Untimely Completion of Corrective Actions Results in No. 11 Service Water Strainer Trip Due to Grassing
- 05000272/311/2011007-03 Failure to Identify and Correct a Condition Adverse to Quality
- 05000311/2013002-05 Failure to implement feedwater control corrective actions
- 05000272/311/2013002-02 Inadequate relay testing instructions cause loss of one offsite power source
- 05000272/311/2011003-02 Inadequate control of switchyard maintenance
- 0500311/2011004-02 Failure to evaluate corrective action options for RCP motor cables
- 05000272/2012003-03 Deficient control of transient equipment in seismic class auxiliary building
- 05000311/2011004-03 Late State Notification of UE
- 05000272/2011007-02 Failure to Perform TS Required Battery Performance Test
- 05000272/2012005-01 Failure to Maintain Adequate Liquid CO2 Inventory for Fire
- 05000311/2012004-01 Inadvertent injection of the auxiliary feedwater into the 23 steam generator
- 05000311/2011004-01 Inadequate IST program evaluation of a pressure relief valve

Procedures

- CY-AP-120-3100, Startup Chemistry for Recirculating Steam Generators, Revisions 13 and 14
- EI-AA-101, Employee Concerns Program, Revision 8
- EI-AA-101-1001, Employee Concerns Program Process, Revision 8
- EI-AA-101-1002, Employee Concerns Program Trending Tool, Revision 6
- ER-AA-1004, Maintenance Rule Functional Failure Cause Determination, Revision 9
- ER-AA-1005, Maintenance Rule- Disposition Between (a)(1) and (a)(2), Revision 8
- ER-AA-2030, Conduct of Plant Engineering Manual, Revision 10
- ER-AA-3002, Component Cross-System Monitoring & Component Health Reporting, Revision 3
- ER-AA-310, Implementation of the Maintenance Rule, Revision 11
- ER-SA-321-1010, testing of ASME Class Code 1,2, and 3 Safety/Relief Valves, Revision 1
- LS-AA-1003, NRC Inspection Preparation and Response, Revision 13
- LS-AA-115, Operating Experience Program, Revision 13
- LS-AA-120, Issue Identification and Screening Process, Revision 11
- LS-AA-125, Corrective Action Program, Revision 16
- LS-AA-125-1001, Root Cause Evaluation Manual, Revision 8
- LS-AA-125-1002, Common Cause Evaluation Manual, Revision 7
- LS-AA-125-1003, Apparent Cause Evaluation Manual, Revision 12

LS-AA-125-1005, Coding and Analysis Manual, Revision 6
 LS-AA-125-1006, Performance Improvement Integrated Matrix (PIIM), Revision 4
 LS-AA-126, Self-Assessment Program, Revision 11
 LS-AA-126-1001, Focused Area Self-Assessments, Revision 6
 LS-AA-126-1005, Check-In Self-Assessments, Revision 5
 LS-AA-4000, Nuclear Safety Culture Monitoring, Revision 2
 MA-AA-100, Conduct of Maintenance Manual, Revision 14
 MA-AA-716-026, Station Housekeeping/Material Condition Program, Revision 10
 MA-AA-716-1005, Predefine Change Processing, Revision 3
 MA-AA-716-210, Preventative Maintenance Program, Revision 10
 MA-AA-716-210-1001, Performance Centered Maintenance (PCM) Process, Revision 7
 NF-AA-30, Special Nuclear Material Control Process Description, Revision 2
 NF-AA-300, Special Nuclear Material Control and Accountability, Revision 14
 S1.OP-AB.CHEM-0001, Abnormal Secondary Plant Chemistry, Revision 29
 S1.OP-SO.CN-0001, Condensate System Operation, Revision 33
 SC.MD-PM.CW-0013, Cleaning Condenser Water Boxes and Installation of Main Condenser
 SC.MD-PM.SW-0003(Q), Service Water Auto Strainer Adjustment, Inspection, Repair and
 Replacement, Revision 33
 SC.OP-AB.ZZ-0003(Q), Component Fouling, Revision 13
 SC.OP-DL.ZZ-0008(Q), Circulating/Service Water Log, Revision 45
 SC.OP-SO.ZZ-0003(Q), Component Biofouling, Revision 8
 EP-AA-125-1002, ERO Performance- Performance Indicators Guidance, Revision 2
 SC.OP-AB.ZZ-0001(Q), Adverse Environmental Conditions, Revision 14
 Tube and Tube Sheet Plugs, Revision 18
 WC-AA-106, Work Screening and Processing, Revision 12
 WC-AA-106, Work Screening and Processing, Revision 12

Work Orders

30213958	60098366	70125819	70142113
30252389	60099098	70126237	70143095
50140183	60101788	70126272	70143862
50143585	60102424	70126819	70145563
50147545	60102788	70126820	70146528
60018482	60106468	70127245	70146562
60028603	60107353	70127362	70149644
60036054	60107780	70127951	70150192
60044055	60107895	70127990	70150644
60056267	60110350	70128050	70154356
60066034	70102904	70128332	80096577
60067264	70115207	70128333	80097747
60085422	70118474	70128770	80099633
60091875	70119080	70129125	80106921
60092416	70119543	70132319	
60097402	70125280	70135415	
60097859	70125691	70136244	

Miscellaneous

PSEG Nuclear 10CFR 50.65 (a)(1) Goals

70104083, Regulatory Assurance Review on 12 CC Heat Exchanger flow, 12/04/2009

70127716, Maintenance Rule a(1) Determination for 1CC25

LER 95-008-00, Controlled Shutdown following Technical Specification 3.0.3 Entry Due to Inoperability of Switchgear and Penetration Area Ventilation System

LR-N980006, 1996 Summary of Revised Regulatory Commitments Salem Generating Station Units 1 and 2, 03/10/98

S1-CAV-MDC-1863

S-2-CC-MEE-1176, Component Cooling Safety Load Flow Requirements-Unit 2, Revision 0

S-C-CC-MDC-2310, Component Cooling Pump Test As-Found Flow Acceptance Criteria, Revision 0

Component Cooling Water Units 1 and 2 System Health Reports, 2nd Quarter 2013

Maintenance Department Performance Improvement Integration Matrix, 2nd Cycle 2013

Salem Generating Station, Unit 1 Risk Assessment 02/03/13-02/09/13, Revisions 0-550147545,

Inservice Testing – Component Cooling Pump, 05/11/2012

S2CAV-2VHE59-MTRX, CAV Maintenance Strategy, 11/29/10

Salem Station Ownership Committee Report 7/18/13

Salem Station Ownership Committee Report 7/30/13

LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
ADAMS	Agency-wide Documents Access and Management System
CAV	Controlled Area Ventilation
CCE	Common Cause Evaluation
CFR	Code of Federal Regulations
CISA	Check-in Self Assessment
CREACS	Control Room Envelope Air-Conditioning System
FASA	Functional Area Self-Assessment
FIN	Finding
IMC	Inspection Manual Chapter
NCO	Nuclear Control Operator
NCV	Non-cited Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records System
PMCR	Preventative Maintenance Change Request
PRA	Probability Risk Analysis
PSEG	PSEG Nuclear LLC
RCE	Root Cause Evaluation
SDP	Significance Determination Process
SPAV	Switchgear and Penetration Area Ventilation
TS	Technical Specifications
WGE	Work Group Evaluation