U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report:	50-272,311/98-81
License:	DPR-70, DPR-75
Licensee:	Public Service Electric and Gas Company
Facility:	Salem Nuclear Generating Station, Units 1 and 2
Location:	P.O. Box 236 Hancocks Bridge, New Jersey 08038
Inspection Period:	February 10-20, 1998
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Areas Inspected: Management Programs and Independent Oversight, Operations, Maintenance and Surveillance, Engineering.

Results: Inspection results are summarized in the attached executive summary.

EXECUTIVE SUMMARY

Readiness Assessment Team Inspection
Salem Unit 1 Nuclear Power Plant

NRC Inspection Report No. 50-272,311/98-81

BACKGROUND

Salem Units 1 & 2 were removed from service by Public Service Electric and Gas Company (PSE&G) on May 16, 1995, and June 7, 1995, respectively. The plants were shut down as a result of specific plant conditions and events. As a result of continued performance deficiencies, weak management oversight, and ineffective communications, coupled with the Technical Specifications (TS) required shutdown of both units, the licensee voluntarily agreed to extend the duration of the outages for Salem Units 1 & 2. In response to this voluntary action, NRC Region I issued a Confirmatory Action Letter (CAL) on June 9, 1995. This CAL delineated licensee commitments that must be satisfied prior to the restart of either unit. The Readiness Assessment Team Inspection (RATI) was conducted to verify that PSE&G made sufficient progress in addressing the issues leading to the shutdown and to verify that plant equipment and staff were ready to safely restart and operate Salem Unit 1 while supporting continued operation of Unit 2.

MANAGEMENT PROGRAMS AND INDEPENDENT OVERSIGHT

The inspectors concluded that effective management oversight programs were in place to support safe restart of Unit 1 while Unit 2 is also operating. A strong management team with a good safety ethic was evident. Goals and expectations were effectively communicated with occasional exceptions. Management plans to continue to refine performance indicators to permit more rapid and efficient detection and resolution of developing plant and process problems are appropriate. (Section M&O1.1)

The Quality Assurance organization was performing its assigned functions and responsibilities adequately to support the restart of Salem Unit 1. (Section M&O2.1)

The licensee's self-assessment programs were actively used to support the mode change phases of Unit 1 startup and planned to proactively support the other startup phases. The programs were used to make improvements in most organizations' operations and processes. However, improvements in the programs of some staff organizations such as the Corrective Action and Licensing groups were necessary to take full advantage of self-assessment techniques. (Section M&O2.2)

Review committees functioned in a formal, efficient, and effective manner and were adequate to support the restart of Unit 1. (Section M&O2.3)

The low threshold of reporting problems gave the inspectors confidence that problems were being identified in the Corrective Action Program. Quality Assurance audits produced a high quality product and identified a number of deficiencies in the Corrective Action Program. In spite of the problems identified, effective management oversight of the Corrective Action Program was not evident. (Section M&O3.2)

Other negative observations included difficulty in utilizing the root cause training data base, the apparent lack of significant progress in performing effectiveness reviews, and a cumbersome corrective action process. (Section M&O3.3)

OPERATIONS

The licensed operators were knowledgeable, professional, and conscientious regarding safe plant operations. Control room conduct was excellent with good command and control. Communications were very good. Individual and shift turnovers were professional, detailed, and thorough. Pre-briefs, prior to plant evolutions and tests, were routinely accomplished. Management involvement and oversight was noted throughout the course of the inspection. The shutdown of Unit 2 and the heatup of Unit 1 were accomplished in a deliberate and well controlled manner. Shift technical advisor involvement was evident, especially in regard to reactivity management. (Section O1.1)

The non-licensed equipment operators were knowledgeable, were aware of their assigned responsibilities, assured plant deficiencies were corrected, and conducted good turnovers. (Section O1.2)

Existing operator work-arounds, control room indicator deficiencies, and operator burdens were being managed and tracked appropriately. A general decline had been noted in the number of outstanding items in these areas, and the operators indicated that they were comfortable with those that existed. They also noted that significant improvements had been made in this area, and that Maintenance and Engineering were actively supporting operations in an effort to resolve those deficiencies that did exist. The tagging process and equipment lineups were found to be adequate. The TS tracking methods were effective in maintaining operator awareness of the status of TS action statement requirements. (Section O2.1)

Operations procedures were technically correct, operators complied with the procedures, initials and signatures were entered as appropriate, and appropriate reviews were performed prior to and following completion of a procedure. (Section O3.1)

The training and qualifications of Operations personnel were satisfactory. Licensed operator performance at the training simulator was professional and requalification evaluation results were satisfactory. Overall, the inspector concluded that training and qualification of the operations staff were sufficient to provide for a safe plant startup and continued operation. (Section O5.1)

The Operations self-assessment process was in place and effective in identifying strengths and weaknesses in operator performance. Quality Assurance was actively involved in ongoing operational activities and reports were detailed and effective in keeping management informed of operations and personnel performance trends. (Section O7.1)

MAINTENANCE AND SURVEILLANCE

Inspectors assessed that implementation of the Preventive Maintenance (PM) program was adequate. The backlog of PMs was large, but was properly managed and was trending down. The backlog was properly categorized and safety-related PMs were performed as required. PM deferrals were adequately justified. (Section M1.2)

The limiting condition for operation (LCO) maintenance plan formal critiques were thorough and self-critical, and addressed areas for improvement, successes, and failures. The LCO maintenance process was a good initiative, but was not yet mature. Continued management attention is appropriate until the process is fully developed. (Section M1.3)

The surveillance test program and inservice test program were adequately scheduled and implemented. (Section M1.4)

Personnel complied with procedural requirements, exhibited good work practices, and were knowledgeable. Rework was being tracked appropriately. (Section M1.5)

The overall plant material condition and housekeeping were adequate to support restart. Some minor deficiencies were observed that indicated continued aggressive attention was necessary to ensure management standards were met and to identify and capture material problems in the plant. Use of the equipment malfunction identification system deficiency tag system was inconsistent. The corrective maintenance backlog was large, but was properly managed. A reasonable plan had been developed to reduce the backlog. (Section M2.1)

Maintenance procedures reviewed were adequate. The procedure revision backlog was properly prioritized with reasonable reduction goals. The process to control issue of the most up-to-date procedure revision to the field from the document control system was adequate. (Section M3.1)

The Maintenance department was able to support the plant. The organization was adequately staffed and demonstrated strong management and teamwork during routine and emergent activities. The maintenance planning and scheduling processes were not mature, but were adequate to track and address plant equipment deficiencies. The prioritization and planning for safety-related activities was adequate. (Section M6.1)

The Maintenance self-assessment and corrective action program was effectively identifying and evaluating problems. The condition report backlog was properly prioritized and managed. Action plans were in place to address problems identified by trending of condition reports. Maintenance and Planning self-assessments and Quality Assurance surveillances were effective in identifying problem trends to management. (Section M7.1)

Executive Summary

ENGINEERING

System Engineering management oversight and involvement ensured station priorities were being addressed. Daily conference calls between the Engineering departments and an action item tracking system were effective tools for communicating engineering priorities. Direct management involvement was observed in significant issues with the potential to affect plant safety. (Section E1.1)

A review of operability determinations concerning significant design and licensing issues found that the licensee provided appropriate technical and regulatory justifications. No safety concerns were identified with regard to the current plant condition and the licensee was communicating with the Office of Nuclear Reactor Regulation to resolve and/or clarify certain Salem licensing basis requirements. (Section E2.1)

System performance monitoring programs provided an appropriate framework for predicting equipment problems prior to their development. Procedural guidance reflects the integration of input from other performance monitoring programs such as inservice test and motor/pump trending programs. However, the monitoring role of system managers was not yet fully implemented due to emergent issues associated with current plant status. A planned transition to full implementation of the performance monitoring program, following the Unit 1 restart effort, is intended to ensure acceptable safety system reliability and availability. (Section E3.1)

A review of recent deficiencies entered in the licensee's corrective action program found the majority of issues were adequately addressed. Two exceptions were identified. In one case, an engineering evaluation for unacceptable Emergency Control Air Compressor test results was not performed as required due to personnel error, and a cognizant system manager did not follow-up on the problem. In the second case, a safety-related cooler was significantly degraded by grass in the service water system, and the impact on other service water cooled equipment was not formally evaluated as required. Information relied upon by the licensee in an undocumented evaluation of generic implications was not verified or confirmed. (Section E4.1)

System managers were actively supporting resolution of priority station issues and were working to reduce the corrective maintenance backlog for their systems. During interviews and discussions regarding specific issues, system managers demonstrated a good general knowledge of their systems and responsibilities. The oversight and development of less experienced Salem System Engineering staff continues to be a challenge for licensee management. (Section E4.2)

The licensee is committed to reduction of the corrective action and modification backlogs. Appropriate reviews have been performed to ensure the backlog is understood and will not impact the safe restart of Unit 1 or the continued operation of Unit 2. A sample review of the corrective action item backlog by the inspector found no outstanding items requiring action before restart. (Section E6.1)

The licensee's self-assessments provide insightful views on engineering programs and their implementation. In light of the current engineering workload and backlog of corrective action items, licensee management attention is necessary to ensure corrective actions for self-assessment findings are implemented and are effective. (Section E7.1)

The root cause investigation and repair activities associated with the failure of the 2A emergency diesel generator turbocharger received excellent management oversight. Appropriate technical support was provided for the investigation using internal and external personnel. Affected components were controlled to ensure evidence was preserved. Although the licensee's root cause investigation was not finished at the conclusion of this inspection, the observed portions of the licensee's investigation were well performed. (Section E7.2)

OVERALL CONCLUSIONS

The team concluded that the licensee was ready to restart of Salem Unit 1 upon completion of required testing and emerging maintenance issues. However, important challenges remain which include completion of Corrective Action Program improvements, completion of the work control process implementation, backlog reduction, and maturing of the system engineering program.

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REPORT DETAILS

I. MANAGEMENT AND OVERSIGHT

M&O1 Management Programs

M&O1.1 Management Observations

a. Inspection Scope (93802)

The inspectors diagnosed management oversight of the organization by reviewing procedures and other documentation, through interviews at all levels of the organization, and observations in the control room and other plant work areas.

b. Observations and Findings

Goals and Objectives:

The inspectors noted that the Nuclear Business Unit's (NBU) goals as specified in the 1997 Business Plan are consistent with those of the Corporation and that the licensee has included safety as a goal for 1998. The methodology for achieving the top-level NBU goals was based on related supporting goals and cascading action statements at each lower level in the organization. If these lower level actions are correct and accomplished, then the NBU Goals should be achieved. The Business Plan for 1998 had not been completed because the Chief Nuclear Officer (CNO) had only recently joined the Corporation. However, interviews with the CNO indicated his intention to continue to follow the pattern established by his predecessor.

Oversight:

The Inspectors determined that Salem had a strong management team even though key managers had rotated to new assignments since the June 1997 assessment of Unit 2. Close working relationships between key individuals were evident at meetings and in the field. Inspectors frequently observed senior managers in the plant. Managers led by example and communicated their expectations both verbally and by demonstrating their requirements. Examples were Unit 1 containment inspection tours by the General Manager Salem Operations and the Director, Unit 1 Recovery, with Superintendents and other responsible personnel. Conservative management decision-making was demonstrated by repeated emphasis on plant and personnel safety over schedule, and particularly by management's conservative decision to shut down Unit 2 and delay the transition to Mode 4 on Unit 1 while determining the root cause of the 2A diesel generator turbo-charger failure. Top down communication was satisfactory. During interviews with the inspectors, management verbalized a thorough knowledge of plant and process problems remaining to be solved and methods to be used. However, these ideas were not always communicated to the lower levels of the organization. An example was the incremental loading of work into the 12-week schedule rather than fully loading it at the completion of Unit 2 start-up. This plan was not known or understood at all levels. Another was the lack of a plan to improve the Corrective Action Program

(CAP). The strong safety focus which management projected appeared to be accepted throughout the organization. Ownership and teamwork to the Superintendent level were demonstrated at the Superintendents' daily meeting, and these expectations were being extended to first-line supervision. Management had also planned and allocated funds for improvements to simplify and expedite work processes. The inspectors attended the CNO's initial all-hands meeting. The CNO did an excellent job communicating his management philosophy and quelling lay-off rumors. He also commented on the rotation of management assignments mentioned above and stated that organization stabilization was one of his primary goals.

Performance Indicators

Performance indicators (PIs) were too numerous. There were approximately 840 on the Local Area Network (LAN), which was an increase of about 200 since the Salem 2 restart assessment. Twenty-five percent of the LAN indicators were inactive. Procedure NC.NA-AP.ZZ-0079(Z), Rev. 0, Performance Measurement Program, did not address the quantity of indicators but adequately addressed responsibilities, content and format, the "color" methodology, reporting requirements, and records. The excessive number of PIs was recognized by the organization. Engineering had a plan to reduce the indicator population and both Maintenance (down to 75 from more than 100) and Operations (from 50 to 34) had made progress. Top-level performance indicators were color-coded as follows: Green - Excellence (exceeds standard performance); Yellow - Meets standards; Red - Needs improvement (not meeting standards or targets). The inspectors noted that these indicators did not appear to contribute materially to management problem solution as the number of inputs which comprised the top-level indicators caused them to remain in the "red" condition for extended periods. The licensee indicated its intention to restructure the PI program following Salem 1 start-up.

c. Conclusions

The inspectors concluded that effective management oversight programs were in place to support safe restart of Unit 1 while Unit 2 is also operating. A strong management team with a good safety ethic was evident. Goals and expectations were effectively communicated with occasional exceptions. Management plans to continue to refine its performance indicators to permit more rapid and efficient detection and resolution of developing plant and process problems appear appropriate.

M&O2 Oversight

M&O2.1 Quality Assurance Effectiveness

a. Inspection Scope (93802)

The inspectors reviewed Quality Assurance (QA) audit reports and monthly reports for 1997, monitored QA inspectors in the field, and interviewed QA management and staff. Specific observations are described in Sections II, III, and IV of this report.

b. Observations and Findings

A review of QA monthly reports indicated that process and other problems were being surfaced and communicated to management, but that management had not developed plans to solve these problems in all instances. An example was the CAP, which QA had repeatedly reported as unsatisfactory, but recovery plans had not been prepared by line management (see Section M&O3.2). QA provided frequent and incisive comments on the departments' self-assessment programs in monthly reports. The inspectors noted that QA had developed its color-coded red, yellow, and green PIs based on different senior management-approved criteria than those used by the line organizations. These different evaluation approaches appeared to offer value added as they provided a QA verification of the credibility of the line organization's criteria. The licensee provided an example of an instance when QA and Engineering's top level indicators did not agree. QA's was red while Engineering's was green for the same indicator over the same period. The two organizations met and resolved their differences in favor of QA's findings. QA personnel observed in the field were competent and thorough. An example was a QA inspector's evaluation of an Operations self-assessment. The assessor was immediately provided with suggestions to improve his performance, and a detailed report of the evaluation was promptly submitted by the inspector. An external independent audit of the licensee's QA Program conducted from October 6 through October 16, 1997 by QA personnel from Limerick, Nine Mile Point, and Ginna nuclear plants reported favorably on Salem's QA performance. QA's self-assessments reviewed by the inspectors were self-critical and included improvement recommendations for reductions in low value activities (Assessment Number 97-037), improvements in mandatory QA reading lists (Assessment Number 97-044), and the implementation of the QA Surveillance Program (Assessment Number 97-050).

c. Conclusions

The QA organization was performing its assigned functions and responsibilities adequately to support the restart of Salem Unit 1.

M&O2.2 Self-Assessment Effectiveness

a. Inspection Scope (93802)

The inspectors reviewed the self-assessment programs in Salem Operations, Maintenance, Planning and Scheduling, Design Engineering, System Engineering, and supporting staff organizations. Inspectors reviewed procedures, reporting forms, historical documents, and self-assessment evaluations by QA. In addition, inspectors interviewed personnel responsible for the self-assessment programs in each of the above departments, personnel responsible for the conduct of selected self-assessments, and witnessed the conduct of self-assessments in the field.

b. Observations and Findings

Operations, Maintenance, and other Salem organizations that operate under SC/SA-AP.ZZ.0034(Z), Rev.2, Self-Assessment Program, had excellent self-assessment programs. They routinely performed more self-assessments than required, treated them seriously, validated them, and used their results to improve performance. Systems Engineering also conducted excellent self-assessments, although QA audits indicated some late submittals. Design Engineering's self-assessments had improved since the June 1997 Salem 2 RATI. A completely revised Engineering Department procedure was in effect, ND.DE-PS.ZZ-0022(Z), Rev. 3, Self-Assessment Program. One planned assessment covering the design change process was completed in late 1997 (EA97-085 dated 12/3/97), and a follow-on (EA98-01) was planned to be completed by the end of March 1998. The latter assessment was not started as a self-assessment so the format was not in accordance with the procedure and the lead assessor had not been trained. However, all required steps were completed and the assessment appeared to be a quality product. QA had a documented self-assessment program, IG-10, Rev. 0, Quality Assessment Internal Guideline, that allowed the QA Manager scheduling flexibility. The Corrective Action Group did not have a documented self-assessment program. The Licensing organization had not done recent self-assessments and did not recognize that their program should conform to the Engineering Department procedure. The self-assessment program effectively supported the affirmation system and mode transition hold points that are key safety aspects of the startup safety program, SC.SE-TI.ZZ-001(Q), Rev. 0, Startup and Power Ascension Program. An inspector witnessed a self-assessment of a tag-out evolution conducted by a senior reactor operator (SRO). The assessor constructively critiqued the nuclear equipment operator's (NEO) performance of the tag-out. It was acceptably performed so the comments were performance enhancing. The assessor properly completed and submitted all required documentation.

The inspectors noted that management observation assessments had also been implemented. A good initiative was noted, in that, selected assessment results were being reviewed at the morning quality meeting.

c. Conclusions

The licensee's self-assessment programs were actively used to support the mode change phases of Unit 1 startup and planned to pro-actively support the other startup phases. The programs were used to make improvements in most organizations' operations and processes. However, improvements in the programs of some staff organizations were necessary to take full advantage of self-assessment techniques (e.g., the Corrective Action and Licensing groups).

M&O2.3 Review Committee Effectiveness

a. Inspection Scope (93802)

Inspectors attended Station Operations Review Committee (SORC), Management Review Committee (MRC), and Corrective Action Review Board (CARB) meetings. In addition, shift turnover, Superintendents, and the Quality meetings were frequently attended by inspectors. The procedures and charters related to the above committees were also reviewed.

b. Observations and Findings

All committee meetings attended were conducted in a professional manner. Presenters were generally well prepared. Reviewing personnel were professionally competent, asked well thought-out questions, and generally demanded quality performance. However, an LER (98-01) was approved by SORC with a weak safety consequence analysis. Procedure NC.NA-AP.ZZ-0004(Q), Rev.8, Station Operations Review Committee, describes the functions, responsibilities, qualifications, and meeting procedures of the SORC. By separate list, the licensee had authorized three SORC committees because of the work load associated with the startup of Unit 1 and the recent operational status of Unit 2. These committees met on a fixed schedule during the week. Procedures authorized special meetings based on need. Members for the SORC were authorized by the Salem General Manager. Additional backup members were also authorized in writing. The inspectors noted that the list of SORC members also defined the membership of the CARB and the MRC. The CARB charter document, Rev. 4 dated 1/7/98, specified that Nuclear Training and Corrective Action Group representatives are CARB members. However, these organizations were not represented on the authorized list. The Charter also called for Corrective Action and Quality representation, an organization that no longer exists.

The CARB was required to review corrective actions for level 1 and 2 condition reports (CRs). The inspectors observed both CARBs scheduled during the inspection. The group provided excellent insight to proposed root cause analyses. They were well prepared before the meeting convened and asked intrusive and probing questions.

c. Conclusions

Review committees functioned in a formal, efficient, and effective manner and were adequate to support the restart of Unit 1.

M&O3 Corrective Action Program

M&O3.1 General Comments

The inspectors reviewed the site-wide CAPs for the ability to identify, evaluate, and resolve adverse conditions and trends for Salem Units 1& 2 .

The previous Readiness Assessment Team Inspection (RATI) conducted June 9-23 and July 9-11, 1997, assessed this area; however, primary focus was on verification of the necessary structure and elements to enable an effective CAP. This RATI took a more in-depth look at the mechanics and effectiveness of the process. Thus, the site's oversight organizations, QA, and the CAP were inspected for their ability to identify, evaluate, and resolve problems for two units. In addition, management's oversight and response to adverse conditions and trends were included in the inspection scope.

M&O3.2 Problem Identification

a. Inspection Scope (93802)

The inspectors reviewed the licensee's ability to: (1) capture problems at a low level threshold; (2) identify programmatic breakdowns and weaknesses; and (3) effectively implement the CAP.

b. Observations & Findings

Condition Resolution Initiation

When adverse conditions were identified, an action request (AR) initiated the corrective action process. The AR became either a condition report (CR), CAP; corrective maintenance (CM) (work control process); or business process (BP) (administrative adverse conditions). Condition reports are the subject of discussion since they were the only inputs that continued in the CAP. The licensee had three levels of CRs with the more significant issues being assigned to levels 1 and 2.

There were about 8,500 CRs that remained in an open status, site-wide, which were generated between July 1, 1995 (date of inception of CAP) and February 17, 1998. For fiscal year 1997 - about 3,800 CRs were generated for Salem Unit 1. There were 13 level 1; 247 level 2; and about 3,500 level 3. For the current first quarter of 1998, thus far, about 550 CRs have been generated for Salem Unit 1. Salem Unit 2 generated about 6,200 CRs during fiscal year 1997. There were 59 level 1; 751 level 2; and about 5,400 level 3. For the current first quarter of 1998, thus far, 434 CRs had been generated for Salem Unit 2. The large number of CRs

generated for the fiscal year of 1997 and at the mid-point of the first quarter of 1998 demonstrated that the plant workers, line organizations, and audit groups were comfortable with documenting conditions adverse to quality.

The inspectors also conducted observations of field activities to verify that site personnel initiated action requests upon identification of conditions adverse to quality. This sample included line organizations such as Maintenance, Engineering, and Operations. Workers willingness to initiate action requests demonstrated a low threshold for initiation.

Quality Assurance Findings

The inspectors evaluated the QA group's findings regarding the CAP.

QA provided strong oversight via audits conducted biannually on the CAP (the requirement is every two years.). The inspectors reviewed audit 97-190-2 conducted October 27 - November 25, 1997. This audit included similar repetitive failures identified by the NRC inspectors, such as: inadequate oversight of the corrective action group (CAG) over the CAP; misuse of trend codes; level 3 CRs were not being trended; CAG not generating ARs for adverse conditions in other departments; and inadequate performance indicators. A newly identified weakness that also paralleled the inspector findings included fragmented overall coordination of the site-wide trending program.

Inadequate oversight of the CAG over the CAP was previously identified as a deficiency in audit 96-190-2. QA issued a level 3 AR (961121285) and advised the CAG to increase the oversight role, placing emphasis on timeliness of acceptance of CR evaluation assignments and unauthorized extensions of CR evaluations. This area was reinspected as a follow-up action item of audit 97-190-2. Hence, the audit team determined that, "the Corrective Action Group performed inadequate oversight of the Program and failed to provide a proactive role relative to the identification of any misapplication or misuse of the Program in order to prevent recurrence of issues..."

Trend code misinterpretation and inconsistencies resulted from the large number individuals applying trend codes and causal factors. From April 1 - October 28, 1997, 239 evaluation managers applied trend codes to about 1,200 CRs. Three-quarters of the individuals completed two or less CRs. When the problem was first identified, the audit team issued a level 3 AR (961121244) in audit 96-190-2. Audit 97-190-2, however, described the deficiencies in more detail with examples and issued a level 2 AR (971106241).

Level 3 CRs were not being trended since program inception, with the exception of the maintenance line organization, as required by the CAP procedure, NC.NA-AP.ZZ-0006, section 5.13.2, Rev. 15, Corrective Action Program. This was identified in Audit 96-190-2 and again in 97-190-2. The audit team issued a level 2 AR (971106250).

Failure of the CAG to generate ARs to address recurring issues in other departments, as required by procedure NC-NA-AP.ZZ-0000, section 3.1, Rev. 3, Action Request Process, was previously identified in audit 96-190-2 and a level 3 AR (961121285) was issued. Adverse trends identified in quarterly trend reports by the CAG did not have ARs initiated for recurring issues. The CAP guideline CAP-2, Rev.2, step 6.4, required the CAG to initiate ARs for any apparent adverse trend. The audit team issued a level 2 AR (971106262) to track the repeat issue.

Performance indicators did not assess the effectiveness of the CAP's ability to fix and preclude repetitive problems. This repetitive problem was identified in audit reports 96-190-1, 96-190-2, and 97-190-2. The audit team assigned a level X, BP (971112351). By definition, the business process (BP), interdepartmental support, does not qualify as a condition adverse to quality. Thus, the issue will not follow the corrective action process and did not require strong management attention due to its category.

The overall fragmentation of the trending program was a new licensee finding and was captured along with inadequate trend codes and lack of trending level 3 CRs in AR 971106241. Since the CAP procedure required the CAG to be responsible for trending of levels 1& 2 CRs and the line managers to be responsible for periodic (not defined) trending of level 3 CRs, fragmentation can occur.

The QA findings, at times, were not clear and distinct when similar issues were identified (i.e., several issues combined in one AR). The inspectors considered this to be the one weakness in the QA audits. Thus, a specific adverse condition was overlooked. Although the trending problems were grouped together, the fragmentation issue was not addressed.

Licensee Actions

Despite important findings by the QA group, some of which were repetitive, no effective CAG management oversight of the CAP problems was evident. No action plan existed. A high level plan was developed prior to the end of the inspection which identified general areas for improvement but was not detailed.

This was due in part to the fact that the CAP was treated as a process, rather than a centralized program, that did not have clear ownership and accountability. A key position, manager of the CAG, was vacant for the last 10 months. The corrective action group served as the administrative facilitator of the CAP procedure, NC.NA-AP.ZZ-0006, Rev. 15. This procedure outlined the responsibilities of the manager and supervisor, which called for ensuring documentation completeness, administering the Corrective Action Trend Program, coordinating with information systems, and developing, analyzing, and distributing the corrective action performance indicators. Line organizations were expected, by the CAG, to use the procedure to process corrective actions. After interviews with both the line organizations and the CAG, each one considered the other to take ownership of the CAP. Future plans for the CAP included having the line organization become increasingly more responsible for its corrective actions and delinquencies.

In addition, the CAG issued a monthly report on the CAP performance. Performance indicators measured CR timeliness, scheduling, and quality. The inspectors reviewed the monthly report issued February 18, 1997, Ref: NQP 97-0011. For one and one-half years the performance indicators reflected site performance consistently below standard expectation. No formal actions were taken during this time period to ensure accountability of the corrective actions.

At the time of the inspection, there were two designated corrective action coordinators for the line organizations, which were not required positions. They were in the Operations and Maintenance area. These two departments were making improvements via the coordinator in working off backlog and the quality of root cause analyses. The Engineering organization elected not to have a designated corrective action coordinator.

c. Conclusions

The low threshold of reporting problems gave the inspectors confidence that problems were being identified in the CAP. QA audits produced a high quality product and identified a number of deficiencies in the CAP. In spite of the problems identified, no effective management oversight of the CAP problems was evident.

M&O3.3 Other Observations (93802)

During the CAP inspection, the inspectors noted several other areas where improvement was warranted as follows:

Root Cause Training Data Base

The inspectors did not gain confidence in the CAG knowing root cause qualification status of individuals performing root cause analysis. When asked to produce a list of all root cause trained personnel, there was great difficulty in accessing that information and, during the inspection, the inspectors were unable to confirm root causes were performed by qualified evaluators.

Effectiveness Reviews

The previous RATI (97-80) had a concern with the lack of scheduling of corrective action effectiveness reviews (CRVRs) before the CARB as required by NC.NA-AP.ZZ-006, section 5.3.2, Rev. 15. Thus, the inspectors reviewed the rate and percentage in which the CRVRs were scheduled since the last RATI. Salem Units 1,2, and common had 666 CRVRs opened. Of these open CRVRs, 194 (30%) were significance level 1. The CARB coordinator provided the inspectors with a schedule of all CARB activity during the time period from the end of the Unit 2 RATI until December 1997. The CARB reviewed nine CRVRs during that time period of which three were rejected. A schedule for upcoming reviews was not provided to the inspectors. It did not appear that significant progress had been made in this area since the last RATI.

Program Complications

The inspectors noted that the CAP process was cumbersome and difficult to use in some respects. Indicators of this were that multiple procedures were required to capture all issues and fully implement the process; the main procedure (NC.NA-AP-ZZ-006) had 15 revisions and 78 changes since July 1995; trend code designations were too numerous and inconsistently applied decreasing the value of trending; and the computer program was not user friendly for input of ARs or trending. The inspectors noted that the BP procedure was a sub-tier of the CAP program. The BP list was largely an open item tracking list but also contained a number of low significance problems which were not captured in the trending data base. Based on a sample review, the inspectors did not find any significant technical issues classified as BPs; however, this process provided an additional opportunity for misclassification of a problem and deleted some information from trending. An example of an important issue which was treated as a BP is described in section M&O3.2 (Quality Assurance Findings). The licensee indicated that they had recognized the need to improve the process and have initiated an effort to improve it as part of the strategic planning initiative. The inspectors noted that this program was only in its initial stages.

II. OPERATIONS

01 Conduct of Operations

O1.1 General Observations

a. Inspection Scope (93802)

The inspector observed plant operations to assure that daily plant operations were being conducted in a safe and controlled manner consistent with plant procedures and management expectations. Included in this review was the observation of control room and plant activities on a daily basis, including back shift and weekend coverage. The management and administrative controls of operations were evaluated through inspections of equipment tagouts, adherence to administrative procedures such as log keeping practices, annunciator response, shift turnovers, access control, operator work-arounds, control room deficiencies, temporary modifications, supervisory oversight, control board awareness, and identification of TS action statements. Communications between plant management, shift supervisors, and reactor operators regarding plant status and evolutions, and the ability of the operators to control plant maintenance and surveillance were evaluated through extensive control room and plant observations.

b. Observations and Findings

The inspector observed the shutdown of Unit 2 from Mode 1 to Mode 2, and the heatup of Unit 1 from Mode 5 to Mode 4. These observations included the tripping of the main turbine generator, the tripping of one steam generator feed pump, rod

insertion and boration control during the Unit 2 shutdown, and the starting of a reactor coolant pump during the Unit 1 heatup. The observed evolutions were well controlled and included appropriate supervisory oversight. Prior to the shutdown and heatup, shift supervision reviewed with crew the appropriate procedures, addressing various actions to be taken, including those to be taken if things did not go as expected. The operators conducted both evolutions in a safe, controlled, conservative manner and demonstrated a thorough working knowledge of plant system interrelationships. Shift technical advisor oversight kept the operators informed of reactivity control limitations throughout these two evolutions.

The inspector observed all crews on various shifts throughout the course of the inspection. Operators consistently monitored control panels to ensure that expected conditions existed. Overhead panel and control console alarms were acknowledged and appropriate alarm response procedures (ARP) were referred to in a consistent manner by all operators. Followup actions were completed as required by the ARP. For instance, during the shutdown of Unit 2, an unexpected high vibration alert alarm occurred on the 22 steam generator feed pump (SGFP). The operators and shift supervision responded appropriately to the alarm, contacted the NEO and had him locally check the vibration readings. The NEO responded quickly with local readings, and was further instructed to periodically monitor the pump's performance. The control room supervisor discussed actions to be taken should the vibration levels continue to increase; however, the procedure noted critical speeds at which pump performance should be carefully monitored. The Operations superintendent noted that the SGFP had been running at one of the listed critical speeds, which explained the higher than normal vibration readings. Overall, the inspector viewed the actions taken by the operators as being appropriate and in line with management expectations.

The inspector observed control room operating area access control. Personnel access into the control room was controlled by the work control center (WCC). The "at the controls" areas were controlled by the unit reactor operators. The inspector noted throughout the inspection that the reactor operators for both units appropriately controlled access into the "at the controls" area. In one instance, an individual was seen being counseled by senior shift management in regard to the controls in place limiting access to the "at the controls" area of the control room. Also, the inspector noted, in several instances, the shift operations superintendent emphasizing to the reactor operators that they should continue to maintain control of their operating areas, and that the Operations standard guidance for access control must be adhered to.

The inspector observed numerous shift turnovers. These included both turnovers of individual operators as well as shift crew turnover meetings. The individual turnovers included operator board walkdowns and log reviews. Shift turnover sheets were appropriately detailed. The inspector considered the individual operator turnovers to be professionally conducted with good communication of plant status between the on-coming and off-going operators. The crew shift turnover meetings were also thorough and professionally conducted. Senior plant management was often in attendance and often reinforced the department superintendent emphasis on plant and personnel safety.

As noted in the previous Salem Unit 2 RATI, it was determined that a large number of personnel had not initialed the concurrence sheets for the Night Orders or the Temporary Standing Orders, indicating that they had read and understood the direction given. Again, it was determined during this inspection that the concurrence sheets were still not being concurred on. Discussions with several licensed operators indicated that they were knowledgeable of the guidance contained therein, however they had failed to initial the concurrence sheet. This oversight was brought to the attention of senior plant management, and they stated that the process was being changed to delete the concurrence requirements.

During the inspector's observations of the WCC activities and discussions with the shift clerks, the inspector noted several ARs that were written recently that dealt with control room administrative oversights. It appeared that the majority of these errors, most of which dealt with misplaced procedures, missing pages to procedures, or missing maintenance work packages, may have occurred as a result of a decrease in shift manning in the administrative support area. Prior to the start of 1998, each shift had a full time clerk assigned to each shift. With recent personnel reductions, there was as much as two to three days in any given work week where a shift did not have any clerical support. The inspector questioned whether or not the administrative errors had occurred as a result of not having continuous administrative support coverage. The operations corrective action group informed the inspector that they were aware of the errors that had occurred, however they felt that it was not indicative of any adverse trend in this area. Nevertheless, the inspector was informed by the operations manager at the pre-exit on February 20, 1998, that all shifts would again have a full time clerk assigned to each shift. This action would take place as soon as the positions could be filled. Also, the inspectors confirmed that this area was being regularly assessed to confirm adequate support.

c. Conclusions

The inspector concluded that the licensed operators were knowledgeable, professional, and conscientious regarding safe plant operations. Both the control room supervisors and the operations superintendents exercised appropriate command and control. Communications was very good, including repeatbacks and three-way communications. Individual and shift turnovers were professional, detailed and thorough. Pre-briefs, prior to plant evolutions and tests, were routinely accomplished. Management involvement and oversight was noted throughout the course of the inspection. The shutdown of Unit 2 and the heatup of Unit 1 was accomplished in a deliberate and well controlled manner. Shift technical advisor involvement was evident, especially in regard to reactivity management.

O1.2 Field Observations

a. Inspection Scope (93802)

The inspector observed shift turnover activities between non-licensed nuclear equipment operators (NEOs). The inspector also accompanied the NEOs during their

b. Observations and Findings

The turnovers were succinct and addressed ongoing activities, changes in plant equipment status, equipment-out-of service, and deficiencies identified on the shift just completed. During a walkdown observation, a qualified NEO was accompanied by a NEO under instruction (NEO-UI). Both individuals were knowledgeable, conscientious and aware of their assigned responsibilities. In numerous instances, the NEO pointed out to the NEO-UI, various equipment parameters that he should pay particular attention to and what actions needed to be taken should parameters be found out-of-spec. Also, identified deficiencies were appropriately documented and subsequently, action was taken to correct these deficiencies. Both operators demonstrated a questioning attitude during their tour and logkeeping of assigned areas. In one instance, they contacted the control room to question whether or not the 11 diesel generator fuel oil transfer pump should be placed in the regular start position since the 12 fuel oil transfer pump had failed its surveillance during the previous shift. The control room advised the NEOs that they were correct and subsequently instructed them to transfer the pump mode switch from the backup position to the regular start position.

Throughout the inspection, other NEOs were briefly questioned on their assigned areas of responsibility and the status of plant equipment and identified deficiencies. In all instances, it was evident that the NEOs were well-trained, conscientious and well aware of plant equipment status. The inspector noted that the NEOs were properly performing their rounds and that log sheets were properly filled out, including the documentation of any out of specification readings. The inspector also noted on numerous occasions, excellent three-way communication between the NEOs and the control room reactor operators.

c. Conclusions

The non-licensed equipment operators were knowledgeable, were aware of their assigned responsibilities, assured plant deficiencies were corrected, and conducted good turnovers.

02 Operational Status of Facilities and Equipment

O2.1 Configuration Control and Operator Burdens

a. Inspection Scope (93802)

In the plant equipment status area, the inspector assessed the safety tagging process, work control activities in progress, operator burdens (i.e., work-arounds, control room indicator deficiencies, and temporary modifications), technical specification action statement tracking, configuration control and management controls associated with these areas. Also, the valve and control system lineups of two safety systems were independently verified.

b. Observations and Findings

In assessing the safety tagging and equipment configuration controls area, the inspector observed work activities in the work control center (WCC) and held discussions with those individuals manning the WCC. The WCC personnel were responsible for preparing the tags, maintaining and updating the tagging request inquiry system (TRIS) worksheets and ensuring that communication with the control room operations staff was maintained regarding system configuration. The WCC supervisor, a senior reactor operator, reviewed and approved all tagging requests, thus reducing the administrative burden on the control room supervisors. Various tagging releases were reviewed and in one instance, the inspector accompanied the WCC reactor operator into the plant during the performance of an independent tagging verification. This individual was knowledgeable of his responsibilities and in this instance properly performed the independent verification.

During the inspector's review of WCC activities, the capabilities of TRIS in ensuring the maintenance of configuration control were reviewed. In one instance, the inspector was shown how TRIS identified a discrepancy between two tagging releases that conflicted with each other for one common component. Appropriate changes were made by the WCC reactor operator, thus ensuring personnel and equipment safety was maintained.

The inspector conducted informal interviews with control room operators and nuclear equipment operators during the course of observing shift activities. The operators interviewed exhibited a thorough knowledge of plant operations, as well as plant systems and recent system modifications. All personnel indicated that significant improvements had been made to the plant and that communications and support from other onsite organizations had also significantly improved. The inspector questioned the operators about the large number of Unit 1 control room indicator deficiency tags that were present and whether or not it hampered their ability to safely operate the plant. All personnel indicated that the large backlog of deficiencies were being worked off as plant systems were being turned back over to operations and numerous indicators were of minor importance in regard to their monitoring of important plant safety parameters. The inspector noted, following a review of a monthly report on operator work-arounds, burdens and control room indicator deficiencies, that they were actively being tracked and that a general decline was evident. The inspector determined that outstanding control room indicator deficiencies had been properly evaluated and managed such that none of the outstanding deficiencies would preclude a safe restart of Unit 1.

Portions of two safety-related systems were walked down by the inspectors in an effort to determine that the present alignment was the same as the configuration listed in TRIS. The two systems that were verified were a diesel generator and the auxiliary feedwater systems. No discrepancies were noted with the lineup verifications for either of the two systems. There was however, a problem noted by one inspector regarding out-of-date lineups which were part of the site computer data base. These lineups, designated as REST, EQUIP, and TEST were found to be incomplete and were not maintained up-to-date. The inspector was informed that

these system lineups were not part of TRIS and would subsequently be deleted from the existing site computer data base. The inspector later verified with planning and scheduling personnel that these three lineup data base systems had indeed been deleted from the computer data base.

The inspector noted the accurate review and tracking of technical specification action requirements during changing plant conditions on numerous occasions throughout the inspection. The shift technical advisor formally maintained the documentation necessary to maintain adequate controls for tracking technical specification requirements and ensuring effective operator awareness of the same.

c. Conclusions

The inspector determined that existing operator work-arounds, control room indicator deficiencies, and operator burdens were being managed and tracked appropriately. A general decline had been noted in the number of outstanding items in these areas, and the operators indicated that they were comfortable with those that existed. They also noted that significant improvements had been made in this area, and that maintenance and engineering were actively supporting operations in an effort to resolve those deficiencies that did exist. The tagging process and equipment lineups were found to be adequate and one minor concern involving out-of-date information in the data base was addressed and resolved by the facility during the inspection. The technical specification tracking methods were effective in maintaining operator awareness of the status of technical specification action statement requirements.

03 Operations Procedures and Documentation

O3.1 Observations of Procedure Adequacy and Adherence

a. Inspection Scope (93802)

The inspector reviewed several procedures for adequacy and adherence to those that were utilized during the conduct of surveillance tests, the shutdown of Unit 2 and the heatup of Unit 1.

b. Observations and Findings

Throughout the course of the inspection, numerous surveillance tests were performed in preparation for the heatup of Unit 1. Following completion of these tests, several of these procedures were reviewed by the inspector to ensure that appropriate steps had been completed, reviewed and signed as appropriate. Also, two on-the-spot change forms were reviewed that pertained to changes to S1.OP-IO-ZZ-0002, Cold Shutdown to Hot Standby, which was being utilized during the heatup of Unit 1. These changes were determined to be appropriate and subsequently reviewed and approved by appropriate management supervision. The inspector also reviewed the procedural adequacy of those procedures utilized during the shutdown of Unit 2. No problems were identified.

During the inspector's observation of a simulator training scenario, a procedural problem was noted with AB.4KV-002, in which there was considerable discussion between the CRS and the board operators regarding the proper way of securing a running auxiliary feedwater pump. The board operators disagreed with the direction given to them by the CRS which was by procedure. It was later determined that the procedure step was incorrect and that a draft procedure change had just recently been made to correct the identified discrepancy.

c. Conclusions

The inspector noted that operations procedures were technically correct, operators complied with the procedures, initials and signatures were entered as appropriate, and that appropriate reviews had been performed prior to and following completion of a procedure.

O5 Operator Training and Qualifications

O5.1 Observations of Training

a. Inspection Scope (93802)

The inspector reviewed and observed two training and requalification training sessions to assess the effectiveness of licensed operator training. Also reviewed was training given to operators in regard to plant modifications and operator work arounds.

b. Observations and Findings

The inspector observed the conduct of one simulator training session and one "as found" simulator evaluation. The simulator training session involved the training of licensed operators during the loss of off-site power while in Mode 3 as detailed in lesson plan S-SG-9833. Discussions with the operators following the training session indicated that they were enthusiastic with this type of training. Also, the training representative stated that lesson plan handouts were now routinely handed out to the class during this type of simulator training. This enabled the operator to further study and research the training scenario. The inspector noted significant discussion during and after the conclusion of the scenario. Much of the discussion centered on diagnosis of the event and listing of priorities in an effort to counter equipment malfunctions.

Throughout the inspection, the inspector discussed with the operators the adequacy of training regarding plant modifications. Most notably, the advanced digital feedwater control system (ADFCS) modification was mentioned by the operators most frequently. The inspector reviewed the ADFCS lesson plan and noted that all operators received classroom and scenario training on this modification. The inspector also reviewed the training that was given as a result of the need to insert forced steam flow values for 22 steam generator (SG) steam flow transmitter. In addition to classroom training, three scenarios were conducted which demonstrated

the effects on SG level control and the input/output signal relationships of the ADFCS.

The inspector also observed the conduct of an "as-found" simulator evaluation for one crew during the first day of their scheduled two week licensed operator requalification training program. In this instance, the crew was tasked with diagnosing the failure of several components along with a small break loss of coolant accident, as detailed in scenario lesson plan "LOCA," S-ESG-9802. The inspector also reviewed the formal documented results. The evaluations regarding crew performance were satisfactory. Some weaknesses were identified, especially in the area of communications. These results coincided with that of the inspector's evaluation.

The inspector noted a good initiative regarding use of a peer reviewer from another licensee.

c. Conclusions

The training and qualifications of operations personnel was satisfactory. Licensed operator performance at the training simulator was professional and requalification evaluation results were satisfactory. The manner in which the licensed operators performed on the simulator was very similar to that noted during control room observations. Management evaluations of operator performance was appropriate for that observed and/or reviewed by the inspector. Overall, the inspector concluded that training and qualification of the operations staff was sufficient to provide for a safe plant startup and continued operation.

07 Quality Assurance in Operations

O7.1 Management Oversight and QA Observations

a. Inspection Scope (93802)

The inspectors observed management oversight and quality assurance observations throughout the inspection period in an effort to determine their involvement and effectiveness in assessing the quality of daily routine and non-routine operations.

b. Observations and Findings

The inspectors reviewed numerous completed management observation forms dealing with observations of operations activities and/or individual performance. Those completed observation forms reviewed indicated that management personnel were actively involved in the oversight of operational activities. From the inspectors sampling of completed observation forms, the inspector noted detailed descriptions of the observed activity along with a description of any strengths or weaknesses observed. ARs were generated, following the observed activity, if followup action was deemed necessary to correct any identified concerns or deficiencies.

The inspector also noted the presence of quality assurance (QA) personnel in the control room on almost a daily basis. QA coverage was noted during both the shutdown of Unit 2 and the heatup of Unit 1. The inspector reviewed the QA surveillance documentation of the Unit 2 shutdown and noted that their overall observations of personnel performance paralleled that of the inspector. The documented QA surveillance findings of the Unit 2 shutdown activities were detailed, thorough, and objective. Through discussions which the QA inspectors, the inspector determined that both individuals were previously licensed individuals, one of whom was previously licensed at Salem. Both individuals were knowledgeable and aware of significant improvements and enhancements that had been made in the performance level of operations personnel.

c. Conclusions

The operations self-assessment process was in place and effective in identifying strengths and weaknesses in operator performance. Quality assurance was actively involved in ongoing operational activities. QA surveillances and management observation reports were detailed and effective in keeping management informed of operations and personnel performance issues.

III. MAINTENANCE

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (93802)

Inspectors reviewed the maintenance area to verify that activities were properly planned and scheduled, conducted in a safe and controlled manner, and conducted in accordance with approved procedures. The backlog of both corrective maintenance (CM) and preventive maintenance (PM) activities was reviewed to verify that all identified plant equipment deficiencies which could impact plant restart were properly evaluated and prioritized. Interviews were conducted with personnel at all levels of the organization, and observations were made of several ongoing maintenance activities.

b. Observations and Findings

Observations and findings are documented in individual inspection areas below.

c. Conclusions

Inspectors concluded that the maintenance programs were adequate to support restart of Unit 1 while supporting continued operation of Unit 2. The overall conduct of maintenance was good, however, significant challenges remained to be faced. Backlogs of corrective maintenance, preventive maintenance, procedure

revisions, and condition report corrective actions and evaluations were high, but manageable. Backlog trends appeared to be downward over the last several months. The backlogs appeared to be properly prioritized, and reasonable plans were in place to manage and reduce the backlogs. The 12 week work management process was a key part of backlog reduction efforts, but it was not fully matured. The work week management process was in place on Unit 2, but has not been implemented on Unit 1. The schedule was not yet loaded to support corrective maintenance backlog reduction goals, and all preventive maintenance activities have not been re-scheduled following the extended unit outages. Nevertheless, required maintenance on safety related equipment appeared to be properly scheduled and performed. Inspectors assessed that overall plant material conditions were adequate to support restart. Some minor equipment deficiencies were noted during walkdowns, indicating that continued management attention is necessary to maintain high standards for identifying and correcting equipment deficiencies. Control of surveillance testing and IST were adequate. Maintenance and Planning self-assessments and QA surveillances were effective in identifying problem trends to management.

M1.2 Preventive Maintenance Program

a. Inspection Scope (93802)

Inspectors reviewed the adequacy of the preventive maintenance (PM) program, including the backlog, PM deferrals, and the status of the PM Optimization Program.

b. Observations and Findings

Inspectors noted that Unit 1 had a backlog of about 500 overdue PMs, down from about 1000 in August 1997. Unit 2, 3, and Common had a backlog of about 150 overdue PMs. Many PMs had become overdue because plant conditions during the extended unit outages did not support PM performance on many components. As a result, many PMs have not yet been logically scheduled into the 12 week work management system or the 3 year PM cycle, which was still under development. The licensee estimated that it would take approximately one operating cycle to complete the 3 year schedule. The backlog appeared to have been properly prioritized into reasonable categories, and safety related PMs were being performed as required. Inspectors reviewed the PM backlog for selected safety related systems and assessed that there were no single or aggregate issues affecting Unit 1 restart. Inspectors reviewed the performance of four PMs. No deficiencies were noted.

The large number of PMs in the backlog also resulted in a large number of deferrals and in a large number of PMs going overdue without proper deferrals. Inspectors assessed that this was largely an administrative issue. The licensee recently addressed this issue at Hope Creek, and was in the process of developing a generic PM deferral that will lay out the rules to follow in moving PMs to support the 12 week work management system. Inspectors reviewed four PM deferrals, covering 84 components, and assessed that the deferrals were adequately justified.

The inspector briefly reviewed the status of the PM Optimization Project, previously reviewed during the Salem 2 RATI. The project appeared to be on schedule to be completed by the end of 1999. The data base was essentially complete and was providing useful information for justifying changes to the current PM program that were identified on a day-to-day basis.

c. Conclusions

The inspectors assessed that implementation of the PM program was adequate. The backlog of PMs was large, but appeared to be properly managed and was trending down. Many PMs went overdue because plant conditions during the extended outages did not support continued PM performance. The licensee has not yet completed scheduling these PMs into the new 12 week work management process or into the 3 year PM cycle, which was still under development. The backlog appeared to be properly categorized and safety related PMs were performed as required. PM deferrals were adequately justified.

M1.3 Conduct of LCO (Limiting Condition for Operation) Maintenance

a. Inspection Scope (93802)

Inspectors reviewed the requirements for LCO maintenance contained in SC.SA-SD.ZZ-0011(Z), Rev.3, Work Management Manual, and the LCO plan in use for 2A diesel generator, and attended the critiques for LCO maintenance conducted on the 2A diesel generator (DG) and 21 containment fan cooling unit (CFCU).

b. Observations and Findings

The LCO plan included justification for the work, prerequisites, activity time estimates and schedule layout, contingency plans, and risk assessment. LCO plan performance was formally critiqued after completion. The LCO maintenance plan process was implemented for Unit 2 at the end of 1997, but was not yet implemented for Unit 1. Details of the process were still being finalized, based on lessons learned as more plans were implemented. The critiques were attended by representatives from the maintenance disciplines, engineering, planning and scheduling, and operations. The inspectors assessed that the critiques were thorough and self-critical, and addressed areas for improvement, successes, and failures. For example, 12 hours were lost in the 2A DG plan due to a misunderstanding of the method of filling and venting the fuel oil filter housings between the originator of the plan and the operators implementing it. Some time was lost in the 21 CFCU maintenance due to a misunderstanding of whether the breaker was to be swapped out or rebuilt on-line. The critique identified that a better definition of the roles and responsibilities of the LCO project manager was necessary. In addition, problems identified at the critique should be captured in the AR system. Based on review of the two LCO maintenance plans, discussion with plant staff, and observation of the LCO critique, inspectors assessed that the LCO maintenance process was a good initiative, but was not yet mature. Continued management attention is necessary until the process is fully developed.

c. Conclusions

The LCO maintenance plan formal critiques were thorough and self-critical, and addressed areas for improvement, successes, and failures. The LCO maintenance process was recently implemented for Unit 2, but was not yet implemented for Unit 1. The LCO maintenance process was a good initiative, but was not yet mature. Continued management attention is appropriate until the process is fully developed.

M1.4 Surveillance Test Program

a. Inspection Scope (93802)

Inspectors observed portions of several surveillance test activities to verify that testing was conducted in a controlled manner in accordance with the test procedures. A sample of surveillance test procedures were reviewed to assess technical adequacy and clarity. Surveillance test scheduling and the in-service test (IST) program were also reviewed.

b. Observations and Findings

Inspectors observed portions of some surveillance testing and reviewed completed surveillance test procedures, including:

S1.OP-ST.DG-0001(Q), Rev.29, 1A Diesel Generator Surveillance Test
S1.OP-ST.SJ-0002(Q), Rev.5, IST - 12 Safety Injection Pump
S1.OP-ST.SJ-0001(Q), Rev.5, IST - 11 Safety Injection Pump
S1.OP-ST.SSP-0006(Q), Rev.5, ESF Containment Isolation Phase B
S1.OP-ST.RM-0001(Q), Rev.7, Radiation Monitors - Check Sources
S1.OP-ST.CVC-0003(Q), Rev.7, IST - 11 Charging Pump

Acceptance criteria were clear. Coordination between operations, engineering, and maintenance staff was evident. Adequate pre-evolution briefings were held with personnel involved in the testing, test equipment was properly calibrated prior to the testing, and equipment deficiencies noted during the testing were properly captured in the AR system. Inspectors assessed that the surveillance test program was adequately implemented.

Surveillance testing was properly scheduled within the required frequency and operational mode. The process for extending a surveillance appeared to be properly implemented. Inspectors reviewed the surveillance test extensions (STEXs) for Unit 2 since its restart in 1997. These were properly entered in the AR system as BP-STEXs and were tracked by a scheduler. Six STEXs had been processed since restart last year; only one was still open. It was a refueling outage periodicity test and had been re-scheduled due to manpower constraints. None of the tests had exceeded their technical specification - required periodicity dates, and the open STEX was scheduled for completion well before its due date. Inspectors assessed that scheduling of the surveillance test program was adequately controlled.

Inspectors discussed the implementation of the IST program with the responsible engineer and reviewed portions of the IST program documents. Inspectors reviewed the status of seven ARs from the latest licensee assessments of the IST program, QA NBU IST Audit 97-012, and IST Program Self-Assessment No. PIR 950731269CRCA 07 and assessed that corrective actions were satisfactory. Four were completed, one was awaiting QA verification and management review, one was awaiting a procedure change, and one was awaiting receipt of parts (new differential pressure gages). In addition, inspectors reviewed five surveillance tests with IST implications to verify that proper notifications to the IST engineer had been made, proper IST criteria for the tests were provided, and IST reviews of the tests had been properly completed. No deficiencies were noted. Inspectors assessed that the IST program was adequately implemented to support restart of Unit 1.

c. Conclusions

The surveillance test program and IST program were adequately scheduled and implemented.

M1.5 Maintenance Observations

a. Inspection Scope (93802)

The inspector observed various maintenance activities to verify that personnel complied with procedures and were knowledgeable. The inspector also reviewed the rework tracking process.

b. Observations and Findings

The maintenance staff conducted activities in accordance with approved procedures. Inspectors observed portions of work activities on the 2A diesel generator, Unit 2 pressurizer relief valves 3 and 4, modifications to the pressurizer relief tank piping, 22 heater drain pump motor, and No. 1 station air compressor, and reviewed six completed work packages. No significant deficiencies were noted.

Procedure adherence was good, and changes were appropriately processed when required. Work areas were generally well-controlled and neat. Foreign material controls and cleanliness requirements were properly implemented. The maintenance staff was knowledgeable and adequately trained to conduct assigned work. First line supervisors were routinely observed at the work sites providing oversight.

Management tracked repeat and rework maintenance with a performance indicator. Reasonable goals had been established and had recently been tracking at less than 2 percent. Repeat work issues were documented in the AR system, evaluated, and discussed in a monthly maintenance department report.

c. Conclusions

Personnel complied with procedural requirements, exhibited good work practices, and were knowledgeable. Rework was appropriately being tracked.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Plant Walkdown and Equipment Backlog Review

a. Inspection Scope (93802)

Inspectors made a number of plant tours and conducted several partial walkdowns of systems to assess the material condition of the plant. This included a review of identified maintenance deficiencies to verify that the condition of plant equipment was acceptable to support a safe plant restart. Inspectors also verified that identified deficiencies were being prioritized and corrected commensurate with their safety significance.

b. Observations and Findings

Inspectors made a number of independent plant tours and also accompanied licensee managers and supervisors on a number of tours. Inspectors and supervisors noted several minor deficiencies, such as valve packing leaks, oil leaks, loose or unattached lagging, and inoperative lighting. Overall, plant housekeeping was considered to be adequate. Lighting levels were noticeably lower at Unit 1 compared to Unit 2. Lights were burnt out in some areas, for example, at 12 charging pump, in the 11 component cooling pump room, and in the 22 fuel oil transfer pump room. Electricians were replacing burnt-out lights as part of their pre-Mode 4 (hot shutdown) walkdown activities. Inspectors noted that licensee supervisory tours were repeated several times in the days prior to heating Unit 1 to Mode 4 because the plant did not meet cleanliness standards. Managers and supervisors eventually accompanied work groups to conduct on-the-job instruction of management standards. This indicated that management standards and expectations regarding housekeeping were generally high, but they had not been effectively communicated to the line organization. Generally, control of transient equipment such as carts, scaffolds, and test equipment was good, though inspectors noted unsecured and unattended ladders in the 11 residual heat removal heat exchanger room, the 11 fuel oil storage tank room, and the No.2 refueling water purification pump room. Inspectors noticed an unattached red danger tag under the grating in the Unit 2 auxiliary building 84 foot elevation alley. The tag had been hung on January 20, 1998, but there was no removal date, indicating that the tag was still active. These conditions were reported to the Work Control Center and resolved. The inspectors assessed that these were minor conditions, however, they indicated that continued aggressive attention was necessary to identify and capture material deficiencies in the plant.

Many material deficiencies were identified by Equipment Malfunction Identification System (EMIS) tags and documented in the AR system. Inspectors noted, however, that the use of equipment deficiency tags was an optional part of the work management program. As a result, use of the system was inconsistent. On one tour, the inspector selected five EMIS tags at random. The WCC staff could not locate four in the Managed Maintenance Information System (MMIS). The inspector picked three random equipment deficiencies: a packing leak on 1SJ175

(with an installed drip collection bag), a drain cap leak on 1CC243, and a flange leak on the No.1 spent fuel pool heat exchanger; none of the deficiencies had EMIS tags on them, and none of the deficiencies were captured against the component in MMIS. Inspectors questioned tracking of 32 EMIS tags. One could not be traced and appeared to be on the wrong component. The licensee subsequently audited 40 additional tags, of which one could not be traced in MMIS. The issues appeared to be minor in nature, however, the inconsistent use of the EMIS tags created the potential to unnecessarily complicate the tracking of equipment deficiencies. Due to the minor nature of the inconsistencies, the inspectors assessed that EMIS had not created a hidden backlog of equipment deficiencies. The licensee indicated that they intended to revalidate the EMIS tags to assure that all were captured in MMIS. Inspectors reviewed the Unit 1 list of corrective maintenance work orders associated with EMIS tags and assessed that the work was properly prioritized to support restart of Unit 1.

Non-outage CM backlogs were 2600 at Unit 1, 2700 at Unit 2, and 600 for Unit 3 (the gas turbine) and Common. In addition, there were about 2000 items in the minor maintenance inventory for Units 1, 2, 3, and Common. Inspectors discussed the plan for reducing the CM backlog with licensee staff. In general, the plan consisted of an identification and verification of existing backlog, a categorization of the backlog by type, and prioritization and control of the work in accordance with the work management process. The 12 week work management program at Salem was not yet loaded to support backlog reduction goals. The WIN (Work-It-Now) team program was also a significant part of the backlog reduction effort, particularly for minor maintenance items. The backlog reduction plan appeared to have established reasonable goals and had a high visibility in the maintenance performance indicators. Inspectors reviewed the CM backlogs for selected safety related systems. Backlogs appeared to have been properly prioritized. No restart issues were identified.

c. Conclusions

The overall plant material condition and housekeeping were adequate to support restart. Some minor deficiencies were observed that indicated continued aggressive attention was necessary to ensure management standards were met and to identify and capture material problems in the plant. Use of the EMIS deficiency tag system was inconsistent. The corrective maintenance backlog was large, but appeared to be properly managed. A reasonable plan had been developed to reduce the backlog.

M3 Maintenance Procedures and Documentation

M3.1 Procedure Adequacy

a. Inspection Scope (93802)

Inspectors evaluated the technical adequacy of maintenance procedures and reviewed the procedure change backlog.

b. Observations and Findings

The inspector found procedures used during observed activities to be adequate. The change control process was also adequate.

The Salem procedure revision backlog was 400. Of those, 146 were category 1 or 2 procedures. About 60 percent of those were captured in the Design Change Package (DCP) or Technical Specification Surveillance Improvement Program (TSSIP) process. Inspectors reviewed the backlog and discussed the procedure revision program with the Procedure Supervisor. The backlog appeared to be properly prioritized with reasonable backlog reduction goals. The process to control issue of the most up-to-date procedure revision to the field from the document control system was adequate.

c. Conclusions

Maintenance procedures reviewed were adequate. The procedure revision backlog appeared to be properly prioritized with reasonable reduction goals. The process to control issue of the most up-to-date procedure revision to the field from the document control system was adequate.

M6 Maintenance Organization and Administration

M6.1 Staffing and Scheduling

a. Inspection Scope (93802)

Inspectors assessed the ability of the Maintenance organization to support the plant. Maintenance crafts were still organizationally separated into Salem and Hope Creek groups, but other Maintenance groups, such as Programs and Services, were sitewide groups. The Maintenance Department reported to the General Manager, NBU (Nuclear Business Unit) Maintenance. In addition, inspectors reviewed the planning and scheduling of maintenance activities. Planning and scheduling were conducted under the direction of the Manager, Salem Planning Department, who reported to the Director, Nuclear Business Support.

b. Observations and Findings

Maintenance was adequately staffed with the exceptions of the maintenance engineering group (32 positions with 9 open) and the 12-hour shift teams (five 12-person teams with 7 open positions). The licensee was actively working to fill those staff positions. There was not a dependence on excessive overtime to accomplish work. The organization appeared to be relatively stable, following the December transfer of the maintenance engineering group from Engineering to Maintenance and recent reductions in contractor support. In the long term (about 2 years), the licensee was considering moving to the functional team concept.

The Maintenance organization demonstrated strong management and teamwork. Inspectors attended several maintenance discipline supervisor meetings and one

group standup meeting. Communications within the department and with other site organizations were good, particularly through use of the daily superintendents' meetings. Work priorities were consistent with plant priorities. For example, following the forced shutdown of Unit 2, inspectors noted that site priorities promulgated verbally by the General Manager, Salem Operations, at the morning superintendents' meeting were the same as those promulgated later in the day at a mechanical maintenance meeting. The 12-hour shift team concept appeared to be working very well, and provided immediate support to emergent operations problems. Managers and supervisors were routinely observed in the field. Maintenance staff at all levels demonstrated a high level of morale and enthusiasm.

Maintenance staff responded well to emergent problems. For example, Instrument and Controls staff had previously discussed forced outage work, and were generally prepared when Unit 2 was shut down due to failure of the 2A diesel generator turbocharger. The licensee root cause analysis and repair teams for the turbocharger failure were formed quickly and operated smoothly throughout resolution of the event.

Inspectors noted that stabilizing the 12-week work management process and reducing the corrective maintenance backlog were among the top concerns of the Maintenance organization at all levels. Almost three cycles of the 12-week schedule have been completed at Unit 2, but a cycle had not yet begun at Unit 1. Inspectors attended a daily work week management meeting. Department representatives from the Maintenance disciplines, engineering, and operations attended. The Work Week Manager led the discussion; it was thorough and detailed. The 12-week work management process was not yet matured, but it formed a key component of the plan for identifying and controlling work and reducing CM backlog. The performance of the 12-week schedule was generally tracked by schedule adherence, which recently has been typically high. Inspectors noted, however, that the indicator was only a snapshot of the execution week. The planning department was in the process of producing an indicator that will measure scope growth and control throughout the 12-week process. This would also give an indication of the effect of emergent work on the scope. Emergent work appeared to have a significant impact on the schedule, particularly in the current plant condition, but there was not an indicator that measured its effect. Work Week Managers were highly involved in the discussion of work status and priorities at the daily superintendents' meetings.

c. Conclusions

The Maintenance Department was able to support the plant. The organization was adequately staffed and demonstrated strong management and teamwork during routine and emergent activities. The maintenance planning and scheduling processes were not mature, but were adequate to track and address plant equipment deficiencies. The prioritization and planning for safety-related activities was adequate.

M7 Quality Assurance in Maintenance Activities

M7.1 Assessments, Corrective Action Backlog, and Trending

a. Inspection Scope (93802)

Inspectors observed management oversight of routine activities and problems to assess the degree of success that management has had in identifying causes of problems and correcting them.

b. Observations and Findings

Inspectors reviewed the NBU Maintenance corrective action and self-assessment program. Maintenance had condition report (CR) backlogs of 368 for Unit 2 and 282 for Unit 1. Over the past nine months, approximately 88 percent of the CRs were categorized as level 3, 11 percent as level 2, and 1 percent as level 1. Inspectors reviewed CR levels back to October 1997 and noted a general downward trend in CR backlog from 703 at Unit 2 and 364 at Unit 1.

The CR backlog appeared to be properly prioritized. Generally, corrective actions and evaluations were satisfactory, though documentation of evaluations was occasionally weak. Inspectors reviewed the evaluations and corrective actions for 10 CRs. Nine were satisfactory. One involved incorrect classification of bolting installed in the discharge flange of 11 safety injection pump (PIRS item 971222257), but there was no indication on the CR that generic implications for the other Unit 1 or 2 safety injection pumps had been considered. The issue was referred to the maintenance engineer for resolution and later determined to be isolated to one pump. The inspector determined that the issue was not safety significant.

Managers tracked CR backlog reduction by overdue date. A weekly report was issued that tracked CR status by individual Maintenance group and kept a high level of management attention on overdue corrective actions and evaluations. The January NBU Maintenance Performance Report noted 10 overdue evaluations and 11 overdue corrective actions. Reasonable goals had been established to measure performance. Inspectors did note inconsistencies between the indicators use to track Maintenance department performance. For example, a recent monthly QA assessment of Maintenance assessed that they were "meeting standards," but the department performance indicators were all red. Maintenance managers and superintendents indicated that they were in the process of revising their performance indicators to make them more useful and consistent.

It was evident that Maintenance evaluated and trended CRs. For example, the Maintenance corrective action and self-assessment group had identified that 75% of maintenance errors were skill-based. This was three times the industry average. This trend was developed from evaluation of level 3 CRs. As a result, an action plan was developed and implemented to address the issue.

Self-Assessment and Quality Assessment

The Maintenance self-assessment process consisted of peer observations, planned observations, individual assessments, and MAP (Maintenance Assessment Program) cards (a supervisory observation program). Inspectors reviewed a sample of Maintenance observations for the last nine months, including SMD-PO-97-132 (Housekeeping), SMD-PO-97-137 (Job Turnovers), SMD-PO-97-130 (Work Package Quality), and SMD-PO-97-119 (Material Storage), and reviewed the consolidated observations documented in Maintenance Department Assessment Program Periodic Report of December 1997. Inspectors also reviewed the January 1998 Maintenance Performance Report, which was a periodic self-assessment of Maintenance Department performance against the NBU business plan goals. Inspectors reviewed five MAP cards and noted that the supervisors had made substantive observations. Inspectors concluded that the cards provided useful assessment tools for supervisors in the field. Inspectors also reviewed about 45 observations and self-assessments done by the Salem Planning Department, including SSP-PA-97-003, Assessment of the Work Management Process; PL-PL-97-005, Critique of SW Bay 1ORAM ORANGE Window; SSP-PA-97-002, Salem Planning Department Readiness to Support Unit 1 Restart and Continued Safe Operation of Unit 2; and SSP-PA-97-001, Planning Department Corrective Action Program and Effectiveness of Corrective Actions, as well as numerous observations of work package planning, scheduling, and quality. Self-assessments were generally objective and provided reasonable recommendations for improvement. ARs were generated for identified problems.

In addition, inspectors reviewed a sample of Quality Assessment surveillances, including NBU Assessment Surveillance Reports 97-055 (Maintenance Continued Training), 97-056 (PM Program), and Salem Quality Assessment Reports 97-033 (DCP Field Implementation) and 97-031 (Salem Scheduling Culture Interviews), and reviewed the December and January QA/QIR Monthly Reports.

Generally, Maintenance, Planning, and QA assessments clearly identified the challenges noted by the inspectors during the inspection, specifically, the implementation of the work control management process, the corrective maintenance backlog, and PM scheduling. The assessments also recognized that action plans had been put in place to address long-standing issues. Inspectors assessed that Maintenance and Planning self-assessments and QA surveillances were effective in identifying problem trends to management.

c. Conclusions

The Maintenance self-assessment and CAP was effectively identifying and evaluating problems. The condition report backlog appeared to be properly prioritized and managed. Some inconsistencies were noted in the performance indicators used by managers to assess the health of the organization. Action plans were in place to address problems identified by trending of condition reports. Maintenance and Planning self-assessments and QA surveillances were effective in identifying problem trends to management.

IV. ENGINEERING

E1 Conduct of Engineering

E1.1 Management Support and Oversight

a. Inspection Scope (93802)

The inspector interviewed System Engineering staff, supervision and management, reviewed documents related to equipment performance, and observed routine activities in the department. This inspection focused on the effectiveness of Salem System Engineering in support the restart of Unit 1 and the continued safe operation of Unit 2.

b. Observations and Findings

Emergent plant issues were raised at the Superintendents' morning meeting and any requests for engineering support were then discussed at the Engineering Department's morning conference call. This call provided a forum for timely communication of emergent issues, department priorities, specific assignments, and progress updates for ongoing issues. Participants in this call included Salem and Hope Creek System Engineering, Design Engineering, and Maintenance Engineering. Engineering Department priorities tracked by the Priority Engineering Actions Report (PEAR) were reviewed and updated during these conference calls. Based on the interactions observed, the PEAR was an effective tool for Engineering management to track, prioritize, as assign accountability for significant plant issues.

The inspector found that System Engineering management and supervision were knowledgeable of the technical issues in their respective areas. Priority issues received direct oversight and the inspector observed that items which could affect safety were given a high priority. Strong examples of management involvement were observed during the 2A emergency diesel generator (DG) root cause investigation and recovery efforts. The 2A emergency DG failure is discussed in section E7.2 of this report.

c. Conclusions

System Engineering management oversight and involvement ensured station priorities were being addressed. Daily conference calls between the engineering departments, and an action item tracking system were effective tools for communicating engineering priorities. Direct management involvement was observed in significant issues with the potential to affect plant safety.

E2 Engineering Support of Facilities and Equipment

E2.1 Formal Operability Determinations

a. Inspection Scope (93802)

The inspector reviewed a sample of the open operability determinations (as of February 10, 1998), to assess the adequacy of the supporting technical and regulatory bases.

b. Findings and Observations

Four operability determinations (ODs) were reviewed by the inspector:

97-017 This evaluation addressed an error in the existing Appendix R safe shutdown analysis which could result in required equipment being exposed to a temperature environment in excess of design limits.

97-009 This evaluation addressed the responsiveness of service water valve controllers and the potential for their response to cause certain safety related chillers to trip during an initial start.

96-004 This evaluation addressed inconsistencies between the existing fuel handling building ventilation system and the system's description in the UFSAR.

96-002 This evaluation addressed numerous technical concerns related to the seismic capability of the spent fuel pool cooling system.

The inspector's review found that the licensee provided a detailed assessment of the condition and description of the design basis. The operability issues were described in terms of the capability to perform intended safety functions and comparison with the design and licensing basis. When applicable, compensatory measures were established and institutionalized through administrative controls. In three of the four examples (OD's 97-017, 96-002, and 96-004) the inspector found that appropriate actions have been initiated to clarify the design and licensing bases. The licensee commitments to resolve the fuel pool issues were transmitted to the Office of Nuclear Reactor Regulation (NRR) by letter dated January 19, 1998. Similarly, commitments regarding the resolution of Appendix R issues were transmitted to NRR by letter dated June 6, 1997. The inspector concluded that The licensee had taken appropriate actions to address operability concerns and the licensing/design basis issues.

c. Conclusions

A review of operability determinations concerning significant design and licensing issues found that the licensee provided appropriate technical and regulatory justifications. No safety concerns were identified with regard to the current plant condition and the licensee was communicating with the Office of Nuclear Reactor Regulation to resolve and/or clarify certain Salem licensing basis requirements.

E3 Engineering Procedures and Documentation

E3.1 System Performance Monitoring

a. Inspection Scope (93802)

The inspector reviewed procedures related to system performance monitoring and discussed ongoing activities in this area with the responsible System Managers to assess the capabilities of the program.

b. Observations and Findings

Nuclear business unit procedure NC.NA-AP-ZZ-0048(Q), Revision 3, Performance Monitoring Program, is intended to optimize unit reliability and efficiency by monitoring system, structure, and component performance. Its purpose is to assure a structure, system, or component (SSC) will perform its intended function and predict SSC degradation prior to failure.

Administrative procedure SH.OA-AP.ZZ-001(Q), Revision 0, Conduct of System Engineering Division Activities, provides details regarding the Division's responsibilities and activities. Specific direction on the monitoring of system performance is provided for System Managers in SC.SE-DD.ZZ-004(Z), Revision 0, System Engineering System Notebook Desk Guide. Section 4 of the System Notebook is intended to provide for integrated monitoring of system performance. Key parameters are identified, tracked, and trended. The typical input for this section contains parameters monitored under other programs such as the inservice test program, predictive motor/pump monitoring program, erosion/corrosion program, and others.

The inspector discussed performance monitoring with System Managers and reviewed the contents of several System Notebooks. The inspector found that data was being collected and reviewed but, the administrative update of the notebooks was not current in all cases. System Managers were knowledgeable regarding the parameters trended for their systems and were clearly aware of their responsibility to identify degrading performance trends. The inspector concluded that an appropriate framework for performance monitoring was in place but, additional attention is necessary to ensure its full implementation. Based on interviews with System Managers and System Engineering Department management, current priorities are driven by emergent plant problems and the Salem Unit 1 restart. The current condition of plant equipment is very good based on the repairs and improvements made during the extended Salem outage. The longer term priorities associated with performance monitoring are intended to ensure good safety system reliability and availability in the future.

c. Conclusions

System performance monitoring programs provide an appropriate framework for predicting equipment problems prior to their development. Procedural guidance

reflects the integration of input from other performance monitoring programs such as IST and motor/pump trending programs. However, the monitoring role of System Managers was not yet fully implemented due to emergent issues associated with current plant status. A transition to full implementation of the performance monitoring program, following the Unit 1 restart effort, is planned to ensure acceptable safety system reliability and availability.

E4 Engineering Staff Knowledge and Performance

E4.1 Review of Deficiencies in the Corrective Action Program

a. Inspection Scope (93802)

A sample of ARs in the CAP were reviewed to assess the licensee's effectiveness in identifying and resolving deficiencies affecting safety related equipment.

b. Observations and Findings

The inspector reviewed a listing of ARs generated between January 1 and February 15, 1998. Approximately 30 items were screened based on the information available in the corrective action data base. Four items were selected from this group for discussion with cognizant plant personnel and additional review.

Emergency Control Air Compressor (ECAC)

The ECAC system is safety related but, it is not required to be operable by Technical Specifications (TS). On January 19, 1998, the No. 1 ECAC failed the acceptance criteria for starting pressure and load time required by performance test S1.OPPT.CA-0001. Two ARs were generated to document the problems. AR/CM 980119217 identified that the ECAC may not start as required and that the pressure switch may need to be recalibrated. AR/CR 980119263 identified that the acceptance criteria for percentage of time loaded had been exceeded. Although the AR/CR indicates this second issue was to be formally evaluated by System Engineering, the AR/CR was administratively canceled by the Corrective Action Group with a reference to AR/CM 980119217.

On February 16, 1998, the inspector questioned whether the failed performance test had been evaluated by System Engineering. The licensee subsequently found the evaluation had not been performed and initiated AR/CR 980216085.

Licensee administrative procedure NC.NA-AP.ZZ-0000(Q), Revision 3, Action Request Process, requires that the Action Request type of "CR," for Condition Resolution, be used for conditions adverse to quality. The inspector found no procedural problem with combination of the two ARs. However, Step 5.3.5 D of NC.NA-AP.ZZ-0000 states, "if the condition requires both corrective maintenance and condition resolution . . . indicate that a CR is required in the CR REQUIRED (Y/N) field."

On January 19, 1998, two conditions adverse to quality concerning ECAC performance test acceptance criteria failures were identified in AR/CM 980119217, and the CR REQUIRED field was not used to indicate a Condition Resolution was required. As a result, no engineering evaluation was performed to assess the impact of test results which indicated degradation of a safety related system.

Based on the AR documentation and discussions with System Engineering personnel, the inspector determined the System Manager was aware of the ECAC performance test failures but did not maintain a questioning attitude when the request for an engineering evaluation was not driven by the CAP.

The inspector concluded two problems occurred in conjunction with the ECAC deficiencies observed in January 1998. First, the licensee's deficiency process was not properly implemented to ensure the test failures were evaluated by System Engineering. Secondly, the System Manager was cognizant of the test failure and had not followed up on the problem as of February 16, 1998.

Component Cooling Valve 1CC208 Test Failure

On January 12, 1998, AR/CR 980112280 was issued to document that component cooling water (CCW) valve 1CC208 failed a forward flow inservice test. The initial test flow through the valve was 1 gallon per minute (gpm), appeared to be dirty, and did not meet the 5 gpm acceptance criteria of surveillance test procedure S1.OP-ST.CC-0005(Q). Workers tapped the valve with a wrench and the flow increased. After allowing debris to flush from the valve, a flow of 14 gpm was observed.

The inspector found that the licensee had documented the surveillance test failure in the inservice test program data base. The licensee was able to show that two subsequent tests demonstrated the valve was not held closed by debris. Although the System Manager was aware of a number of problems which led to debris in the CCW system during the extended Unit 1 outage, these issues were not documented or referenced in conjunction with this problem.

The inspector concluded that the licensee had adequately captured the IST failure. After discussions with the System Manager regarding the actions taken to resolve the issue of debris in the CCW system, the inspector did not consider this a continuing problem. The inspector noted that the IST data base did provide references to the work orders which "repaired" the 1CC208. However, information regarding why the valve failed and corrective actions were not entered in the IST data base, which would have been beneficial.

Penetration Area Excess Flow Damper

On December 17, 1997, the licensee identified that an excess flow damper between the auxiliary building and the penetration area was wired open and its spring was removed. AR/CR 971217315 was issued to document this discovery. The 1ABS8 damper is an excess flow damper designed to close on high flow during

a high energy line break in the auxiliary building penetration area. The licensee's initial reportability screening did not recognize the discovery as an indication the plant was operated outside its design basis in the past. Although the System Manager attempted to notify Salem licensing the event was reportable, the communication was not effective. 10 CFR 50.73(a)(2)(ii) requires licensees to submit a Licensee Event Report (LER) within 30 days after the discovery of a condition that was outside the design basis of the plant.

On January 20, 1998, Salem licensing personnel became aware of CR evaluation results that indicated the previous reportability screening was incorrect. The damper was not worked on during the extended outage, and had most likely been inoperable during previous periods of Unit 1 operation. On February 19, 1998, the licensee issued LER 50-272/98-002-00to report the issue. The LER clearly indicates that the report was not made within 30 days of the date the problem was discovered. NUREG-1022, Revision 1, Section 2.11 states "Discovery date is generally the date when the event was discovered rather than the date when an evaluation of the event is completed." This issue was planned to be addressed in the routine Resident Inspection Report 50-272,311/97-21.

The inspector concluded that the licensee's process for reviewing potentially reportable events had failed, and that the LER was incomplete because it did not explain why the report date was two months after the date the problem was identified. NRC guidance regarding the latter issue is contained in NUREG 1022, Sections 2.11 and 5.21.

Service Water Cooling to No. 21 Charging Pump

On January 20, 1998, AR/CR 980120280 (Significance Level 2) identified unsatisfactory results during a performance test of the No. 21 Charging Pump gear oil cooler. At the time of the test, the charging pump was cleared and tagged for maintenance. Performance test S2.OP-PT.SW-004 evaluated the service water differential pressure and flow through the gear oil cooler against design basis values. The maximum required differential pressure for this test was 45 psid and the licensee observed 91 psid. When the cooler was opened and inspected, the licensee found a thin mat of grass obstructing a large number of the cooler tubes.

Salem operations procedure SC.OP-AP.ZZ-0006, Operability Determination, Step 5.1.4 requires an operability screening that considers the effect on other equipment. Step 5.1.4 also states, "If the [structure, system or component] is determined to be inoperable, then ensure the reason is clearly documented on page 3 of the computerized AR record. No operability determination is required" The inspector found that the licensee had not documented an assessment of the effect on other equipment, and no record was made on page 3 of the computerized AR.

NBU procedure NC.NA-AP.ZZ-0006, Revision 15, Corrective Action Program, Step 5.2.7, requires an apparent cause evaluation be performed in accordance with DTG-CAP-003, Root Cause Manual, for Significance Level 2 CRs. DTG-CAP-003, Section B, provides the guidelines for Significance Level 2 evaluations. Step B.2

states, "Evaluate the significance of the event or adverse condition, by considering factors such as: extend of condition, generic implications, potential for common mode failure, internal and external history, and safety functions affected by the adverse condition." The inspector's review of the Significance Level 2 engineering evaluation for the CR 980120280 found these issues were not addressed.

Interviews with cognizant Salem personnel revealed that the issue was evaluated and a presentation was made to Salem management regarding the potential for impact on other safety related equipment. The information presented to Salem management was not documented as part of the CR evaluation. The inspector found that certain information relied upon by System Engineering, in the undocumented evaluation, had not been confirmed or actually evaluated.

During the inspection, the licensee completed a performance test on a similar gear oil cooler on a different charging pump and observed acceptable cooler performance. The inspector considered this test additional assurance that the licensee's original engineering judgement was satisfactory, despite the weaknesses discussed above.

The inspector concluded the licensee failed to implement portions of the corrective action process requiring formal evaluation of the service water grass intrusion for generic implications. The intrusion of grass in the Salem service water system appears to be a significant departure from past experience. The NRC Augmented Inspection Team (Report 50-272,311/94-80), which responded to the April 7, 1994, loss of circulators due to a grass intrusion, found no evidence of historical problems with loss of service water due to debris. Based on the history of grass problems at Salem and the potential implications of the January 20, 1998, cooler blockage, the licensee's response to this issue was considered weak.

c. Conclusions

A review of recent deficiencies entered in the licensee's CAP found the majority of issues were adequately addressed. Two exceptions were identified. In one case, an engineering evaluation for unacceptable Emergency Control Air Compressor test results was not performed as required due to personnel error, and a cognizant System Manager did not follow-up on the problem. In the second case, a safety related cooler was significantly degraded by grass in the service water system, and the impact on other service water cooled equipment was not formally evaluated as required. Information relied upon by the licensee in an undocumented evaluation of generic implications was not verified or confirmed.

E4.2 System Manager Knowledge and Performance

a. Inspection Scope (93802)

The inspector interviewed System Managers and reviewed documentation to evaluate their experience on assigned systems and to assess the effectiveness of their coordination with other departments.

b. Observations and Findings

Support of Plant Activities

The inspector found that System Managers were very responsive to site needs and the resolution of issues required to meet restart milestones. The engineers were observed to be directly involved with trouble shooting problems, interfacing with other departments, and coordinating plans to resolve technical issues.

During interviews, the System Managers discussed their roles in the planning and prioritization of work for assigned functional equipment groups. Their efforts were focused on minimizing equipment unavailability and LCO time, while ensuring required maintenance was accomplished. Efforts were also being made to reduce the maintenance backlog by capitalizing on minor work that could be completed under the umbrella of required maintenance outages. The inspector noted that the licensee was working to establish a process which will involve the System SROs in the scoping of work week priorities. Once established, this process is intended to serve as an additional barrier to ensure corrective maintenance affecting plant operators will be appropriately prioritized.

Knowledge of Duties and Resources

During interviews with the inspector, System Managers demonstrated a good general knowledge of their assigned systems, current issues, and the technical resources available to them. Through discussion and research of several technical issues, the engineers demonstrated the ability to locate controlled information within the Management Maintenance Information System (MMIS) and the Document Information Management System (DIMS). The inspector found that the engineers were familiar with other resources such as the System Notebooks, Configuration Baseline Documents, and the limitations associated with certain reference documents.

System Managers were aware of programmatic requirements and management expectations regarding periodic system walkdowns. The inspector found that the engineers were documenting their walkdowns, and in some cases, had developed system specific checklists for use in the field. A licensee plan to require a quarterly system walkdown by the System Manager and System SRO was considered a good initiative.

System Managers were cognizant of programmatic requirements and management expectations regarding their role in monitoring performance of assigned systems. As discussed in Section E3.1, the workload in System Engineering to support the Unit 1 restart is viewed as the short term priority. Administrative update of the trending tools and full implementation of the performance monitoring programs were consistently viewed as longer term priorities.

System Engineering Department Staffing

At the time of this inspection, the Salem System Engineering staff had seven vacancies among the 30 positions on the current organization chart. Approximately half of the current System Managers have one year or less experience with the licensee. However, these new System Managers have an average of more than nine years of previous engineering experience. The inspector concluded that the oversight and development of less experienced staff will continue to be a challenge for licensee management.

c. Conclusions

System Managers were actively supporting resolution of priority station issues and were working to reduce the corrective maintenance backlog for their systems. During interviews and discussions regarding specific issues, System Managers demonstrated a good general knowledge of their systems and responsibilities. The oversight and development of less experienced Salem System Engineering staff will continue to be a challenge for licensee management.

E6 Engineering Organization and Administrative

E6.1 Engineering Work Management

a. Inspection Scope

The extended outage for both Salem units, and a lowering of the threshold for identification of issues in the CAP resulted in a large number of items in the engineering backlog. The inspector reviewed the licensee's assessments of the work backlog not required for startup, and performed an independent review of select items.

b. Observations and Findings

Three licensee reviews have assessed the content of the engineering backlog to identify safety significant issues and other items required for the restart of Unit 1.

- During the System Readiness Review process all open items were reviewed by teams that included System Managers and an Operations Department representative (typically an SRO). These initial decisions were then reviewed by the System Readiness Review Board (SRRB), consisting of system engineering supervision and management. Finally, this restart/non-restart prioritization was presented to the MRC for final approval.

- The Final System Readiness and Affirmation process provided a second review of all open license changes, temporary modification, operability determinations, CAP items, and operator workarounds. Item closures were approved and confirmed by the responsible System Manager and SRO. An aggregate impact review was performed for all items not to be completed

prior to the Unit 1 restart. The Final System Readiness and Affirmation Report was then presented to SRRB and the MRC for approval.

- An engineering backlog review was performed by representatives from Design Engineering, System Engineering and the corrective action group in November 1997. This review categorized individual open items not designated as restart required to ensure that the content of the backlog was understood. Select items were identified by this review as restart required.

In summary, these licensee reviews found that the engineering backlog items will not impact the safe and reliable operation of the Salem units. The inspector observed that approximately half of the backlog items pertain to the corrective action process required by 10 CFR 50 Appendix B and the remaining items are business plan related improvements which should have no direct connection to nuclear safety.

In February 1998, NBU Quality Assessment Surveillance Report 98-07, Assessment of Nuclear Engineering Corrective Action Backlog Screening, was issued. This assessment evaluated the results of the November 1997 engineering backlog review which, in part, targeted items that could be easily eliminated. This Quality Assessment found a large number of screening discrepancies and engineering management responded by eliminating previous plans for the bulk closure of certain groups of backlog items.

In addition to the CAP item backlog, Nuclear Engineering has a backlog of modification package closeout activities. These activities include a large number of noncritical document and drawing updates. The licensee is currently evaluating plans to contract out part of the work necessary to reduce this backlog in a timely manner.

The strategy for closure of the CAP items and modification package backlog was accepted by the General Manager - Salem Operations on January 19, 1998. The closure plan provides milestones for the backlog reduction and includes the use of self-assessment to determine the effectiveness of the plan. The commitment of senior licensee management to reduction of the engineering backlog was evident in the 1998 Nuclear Engineering Department Business Plan.

The inspector reviewed a sample of the engineering backlog items related to conditions adverse to quality or licensee administrative requirements. From the initial screening, ten items were selected for additional followup based on their potential safety significance. In each case, the inspector found that the pending actions would not affect nuclear safety and that when appropriate, compensatory administrative controls were in place. No significant outstanding issues were identified by the inspector's screening or sample item reviews.

c. Conclusions

The licensee is committed to reduction of the corrective action and modification backlogs. Appropriate reviews have been performed to ensure the backlog is understood and will not impact the safe restart of Unit 1 or the continued operation of Unit 2. A sample review of the corrective action item backlog by the inspector found no significant items outstanding.

E7 Quality Assurance (QA) in Engineering Activities

E7.1 QA Surveillance and Self-Assessment

a. Inspection Scope (93802)

A sample of QA surveillance reports, and the most recent System Engineering self-assessment, were reviewed to evaluate the licensee's capability for identifying technical and programmatic issues.

b. Observations and Findings

The inspector performed a sample review of licensee self-assessment activities documented in the following reports:

QA Surveillance Report 97-002:	Salem CFCU Design Assessment Phase 1 - Conceptual Design Review
QA Surveillance Report 97-003:	Preventive Maintenance Program Deferral Process
QA Surveillance Report 97-010:	Salem Unit 2 Air Operated Valve Programmatic Controls
QA Surveillance Report 97-011:	Engineering Effectiveness in Support of the Performance Improvement Request Program
QA Surveillance Report 97-013:	Follow-up Operability Assessments
QA Surveillance Report 98-007:	Assessment of Nuclear Engineering Corrective Action Backlog Screening
Self-Assessment Report:	Service Water Reliability Program as it Relates to River Grass Fouling at Salem Station, February 1998

The inspector found that the reports clearly defined the purpose and scope of the self-assessment to be performed. Assessment findings were typically critical of safety and regulatory implications. In the majority of assessments reviewed, the licensee self-identified procedure implementation and/or programmatic issues. The

inspector found that the self-identified programmatic issues were captured in the CAP as Significance Level 2 ARs. The inspector concluded that, overall, the licensee's self-assessment efforts provide good findings and areas for process improvement. However, the inspector noted that with the current engineering work load, licensee management attention is necessary to ensure that corrective actions for significant self-assessment findings are implemented.

For example, in QA Surveillance Report 97-003, the licensee identified instances of inadequate procedure guidance, inappropriate actions for the implementation of the process and process misunderstandings. A Significance Level 2 Action Request was written to address these issues. In a followup assessment one year later, NBU Assessment Surveillance Report 97-056, documented that little progress or improvement had been made. The followup assessment identified that corrective actions for the original surveillance findings were ineffective or not implemented.

c. Conclusions

The licensee's self-assessments provide insightful views on engineering programs and their implementation. In light of the current engineering workload and backlog of corrective action items, licensee management attention is necessary to ensure corrective actions for significant self-assessment findings are implemented and are effective.

E7.2 Root Cause Investigation for the 2A Diesel Generator Failure

a. Inspection Scope

On February 11, 1998, a TS surveillance test for the 2A DG was aborted after a loud noise was heard in the DG room and the NEO observed a reduction in generator load. The inspector observed the licensee's root cause team assigned to review the DG failure in order to assess the investigation process and to evaluate the potential generic implications of the failure.

b. Observations and Findings

On February 11, 1997, a one-hour TS surveillance test on the 2A emergency DG was performed as part of the restoration from a planned maintenance outage. Approximately 49 minutes into the surveillance test a loud noise was heard by the NEO in the area and an unexpected reduction in generator load was observed. Following communication with the control room, the DG was secured.

Based on initial information, the licensee determined that 2A DG had suffered a type of mechanical failure. Since a thorough investigation and repairs could not be accomplished within the TS Action Statement time remaining, the licensee initiated a shutdown of Unit 2.

A multi-discipline root cause team was established to investigate the DG failure and a licensee director level manager was assigned as the team leader. Appropriate technical support was provided for the investigation using internal and external personnel. The licensee initiated actions to preserve evidence from the failure immediately after the event. The licensee management placed a restriction on the restart of Salem Unit 1 pending information on the generic implications of the 2A DG failure.

Initial investigations discovered that the DG's turbocharger was seized. The root cause team developed a list of possible causes for the failure based on the initial evidence collected. The team then created a plan for investigation, data collection, research, and root cause analysis. The inspector noted that the maintenance team assigned to repair the DG was well coordinated with the root cause team. Appropriate actions were taken to ensure investigation data had been collected prior to the maintenance team proceeding with the next step of the DG recovery plan. The director level licensee managers assigned to the investigation and recovery provided excellent oversight and coordination of these activities.

The disassembly and inspection of the 2A DG turbocharger revealed a turbine blade had separated from the wheel, causing collateral damage to other blades and an imbalance of the rotor assembly. An examination of the rotor bearings indicated the rotor assembly seizure resulted from the imbalance caused by the loss of the turbine blade. Inspections of the turbocharger's stationary turbine blades and internals of the 2A DG indicate that the turbocharger was not impacted by a failed engine component transported through an exhaust header. The inspector noted the licensee carefully controlled the disassembly and inspection of the DG. The photographic and video records of the inspections were excellent.

On February 17, the root cause team presented to the SORC its preliminary findings regarding the EDG failure. The SORC questioned the root cause team regarding the potential for other EDGs to suffer failures similar to the 2A DG. The root cause team's preliminary findings focused on differences between the 2A DG turbocharger and the other DGs. SORC lifted the restriction on the Unit 1 Mode 4 entry based on the information provide by the root cause team. At the conclusion of the on-site inspection, the licensee was continuing to evaluate the root cause of the 2A DG turbocharger blade failure.

c. Conclusions

The root cause investigation and repair activities associated with the failure of the 2A emergency diesel generator turbocharger received excellent management oversight. Appropriate technical support was provided for the investigation using internal and external personnel. Affected components were controlled to ensure evidence was preserved. Although the licensee's root cause investigation was not finished at the conclusion of this inspection, the observed portions of the licensee's investigation were well performed.

V. MANAGEMENT MEETINGS

X.0 ENTRANCE/EXIT MEETINGS

The Team Leader presented the inspection results to members of licensee management on February 27, 1998. The exit meeting was open for public observation. The slides used for the exit meeting are provided as Attachment 1 of this inspection report. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Public Service Electric and Gas

H. Keiser, Executive Vice President - Nuclear Business Unit
L. Storz, Senior Vice President - Nuclear Operations
E. Simpson, Senior Vice President - Nuclear Engineering
A. Bakken III, General Manager - Salem Operations
D. Garchow, Director - Design Engineering
J. Benjamin, Director - Unit 1 Recovery
A. Fakhar, Manager - Plant Maintenance Programs and Services
J. McMahon, Director - Qual/Nuclear Training/Emergency Preparedness
G. Overbeck, Director - System Engineering
J. Pollock, Manager - Plant Maintenance, Salem
D. Powell, Director - Licensing and Regulation
J. Robertson, Manager - Salem Operations
M. Trum, General Manager - NBU Maintenance

Nuclear Regulatory Commission

H. Miller, Regional Administrator
C. Hehl, Director, Division of Reactor Projects
J. Linville, Chief, Reactor Projects Branch 3
M. Evans, Senior Resident Inspector, Salem
S. Barber, project Engineer, Reactor Projects Branch 3
J. Zwolinski, Deputy Director, Division of Reactor Projects I/II, NRR
J. Stolz, Project Directorate, 1-2, NRR
P. Milano, Project Manager Salem, NRR
P. VanDoorn, Senior Resident Inspector, Watts Bar Site, RII
S. Sanders, Special Inspection Branch, NRR
W. Hansen, Contractor
P. Bissett, Senior Operations Engineer
F. Lyon, Resident Inspector, Beaver Valley
B. McDermott, Resident Inspector, Susquehanna

State of New Jersey

D. Zannoni, Nuclear Engineer, BNE

Note: The list of the licensee persons contacted does not include all individuals contacted during this inspection. The key persons involved in the inspection are included in the list.

INSPECTION PROCEDURE USED

IP 93802: Operational Safety Team Inspection

LIST OF ACRONYMS USED

ADFCS	Advance Digital Feedwater Control System
AR	Action Request
ARP	Alarm Response Procedure
BP	Business Process
CAG	Corrective Action Group
CAL	Confirmatory Action Letter
CAP	Corrective Action Program
CARB	Corrective Action Review Board
CCW	Component Cooling Water
CFCU	Containment Fan Cooling Unit
CM	Corrective Maintenance
CNO	Chief Nuclear Officer
CR	Condition Report
CRS	Control Rook Supervisor
DCP	Design Change Package
DG	Diesel Generator
DIMS	Document Information Management System
ECAC	Emergency Control Air Compressor
EMIS	Equipment Malfunction Identification System
gpm	Gallons Per Minute
IST	In-Service Test
LAN	Local Area Network
LCO	Limiting Condition For Operation
LER	Licensee Event Report
MAP	Maintenance Assessment Program
MMIS	Managed Maintenance Information System
MRC	Management Review Committee
NBU	Nuclear Business Unit
NEO	Nuclear Equipment Operator
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
ODs	Operabiity Determinations
PDR	Public Document Room
PEAR	Priority Engineering Actions Report
PI	Performance Indicator
PM	Preventive Maintenance
PSE&G	Public Service Electric and Gas Company
QA	Quality Assurance
RATI	Readiness Assessment Team Inspection
SG	Steam Generator

SORC	Station Operations Review Committee
SRRB	System Readiness Review Board
SSC	Structure, System, or Component
STEXs	Surveillance Test Extensions
TRIS	Tagging Request Inquiry System
TS	Technical Specification
TSSIP	Technical Specification Surveillance Improvement Program
WCC	Work Control Center
WIN	Work-It-Now

ATTACHMENTS

NRC Exit Meeting Slides of February 27, 1998

RESTART ASSESSMENT TEAM INSPECTION

SALEM UNIT 1

NRC INSPECTION 50-272,311/98-81

EXIT MEETING

FEBRUARY 27, 1998

INSPECTION OBJECTIVE

To conduct an independent evaluation of the readiness of plant management, staff, programs and hardware to support safe plant restart and power operation.

INSPECTION SCOPE AND STAFFING

- 6 Team Members.
- Team members from throughout NRC and a representative from the State of New Jersey.
- Onsite Inspection dates February 10-20, 1998.
- Conducted inspection on all shifts, including night and weekend activities.
- Estimate over 600 hours of Direct Inspection.
- Inspection emphasis on safety-related equipment/systems/activities but not limited to that for broad based reviews such as backlogs.

PERFORMANCE ASSESSED IN FOUR AREAS

1. Management Programs/Independent Oversight
2. Operations
3. Maintenance and Surveillance
4. Engineering

MANAGEMENT PROGRAMS AND OVERSIGHT

A. MANAGEMENT STANDARDS AND EXPECTATIONS

- Management has established high standards.
- Management exhibited a strong safety ethic.
- Good teamwork and ownership was evident.
- Goals & expectations effectively communicated to staff with occasional exceptions.

B. INDEPENDENT OVERSIGHT

- QA provided thorough, independent reviews of station activities.

C. SELF ASSESSMENT

- Detailed, critical assessments provided information to improve plant performance with exceptions noted.

D. OVERSIGHT COMMITTEES

- Review committees were effective.

E. CORRECTIVE ACTION PROGRAM

- Low threshold for problem identification.
- Process used extensively by plant staff.
- High level problems received appropriate management attention.
- Licensee identified problems regarding certain aspects of the Corrective Action Program were not being effectively managed to closure.

MANAGEMENT CONCLUSION

The team concluded that management processes, corrective action programs, and oversight functions are in place to support a safe plant restart. However, continued management attention is needed in some areas.

OPERATIONS

A. CONDUCT OF OPERATIONS

- Individual shift turnovers and turnover meetings were thorough.
- Good post turnover briefings with all onsite organizations.
- Communications, control board awareness, attention to detail, and responsiveness to control room annunciators was very good.
- Shutdown of Unit 2 was deliberate and well controlled as was the heat up of Unit 1. Management oversight was noted throughout both evolutions.
- Administrative processes were appropriately implemented with one minor exception.
- Strong management involvement was noted.

B. FIELD OBSERVATIONS

- Nuclear equipment operators (NEOs) were knowledgeable and conscientious.
- NEOs noted plant deficiencies during walkarounds and subsequently took necessary actions to correct.
- NEO turnover briefings were detailed and thorough.

C. PROCEDURES

- Procedures were technically accurate and were adhered to during performance of plant operations, i.e., plant heat up, plant shutdown, surveillance testing.

- Appropriate procedure pre-reviews and shifts briefings were routinely performed prior to performance of plant evolutions or testing.

D. PLANT EQUIPMENT STATUS

- Equipment status tracking and configuration control was adequate.

- Workarounds and other operator burdens are being tracked and addressed. Those that exist appear manageable.

E. TRAINING AND QUALIFICATIONS

- Operator training and evaluations were very good.
- It was evident that management expectations for operator performance during training were carried over to day-to-day control room performance.
- Operators were enthusiastic regarding training.
- The operations and training departments have worked together in an effort towards ensuring that all operators are meeting management expectations.

OPERATIONS CONCLUSIONS

The team concluded that operations programs, together with licensed and non licensed operator knowledge level and performance, were adequate to support a safe and controlled plant restart.

MAINTENANCE AND SURVEILLANCE

A. PLANT MATERIAL CONDITION

- Plant material condition was acceptable, however, management standards have not yet permeated to the lower levels.
- Backlogs were high, however, these were appropriately prioritized; no significant issues were noted.
- Management appeared committed and had a sound approach to reducing backlogs.
- Continued attention is warranted to effectively manage backlog reduction.

B. CONDUCT OF MAINTENANCE

- Staffing was adequate, vacancies for two groups were being addressed.
- Worker knowledge, procedure adherence, and work practices were good.
- Managers routinely provided oversight in the field.
- Corrective action trending identified some skill-based performance problems.

C. PREVENTIVE MAINTENANCE PROGRAM

- The preventive maintenance program was properly implemented.

D. PLANNING AND SCHEDULING

- Planning and scheduling processes were adequate.
- The 12 week schedule is only at the beginning stages of implementation.
- The licensee is implementing changes to improve the processes, e.g. Technical Specifications maintenance plans.

E. SURVEILLANCE PROGRAM

- The surveillance program was being properly implemented.
- The Inservice Testing Program was being properly implemented.

MAINTENANCE AND SURVEILLANCE CONCLUSION

The team concluded that the Maintenance and Surveillance programs are ready for restart of Unit 1 while supporting safe continued operation of Unit 2.

ENGINEERING

A. PLANT TECHNICAL SUPPORT

- Management oversight and involvement ensured station priorities were being addressed.
- System Manager support to the plant was effective, however, the manager role was challenged by emergent issues associated with current plant status.
- Formal operability determinations were technically adequate.
- Operability screenings and deficiency evaluations were generally adequate, with two exceptions identified.

ECAL doc7

B. SYSTEM ENGINEERING PROGRAM

- Staff was knowledgeable of assigned duties and the available technical resources.

- Monitoring programs provide a framework for predicting equipment problems prior to fruition.

- System Engineering self assessments and QA surveillances provided insightful views on processes, programs and their implementation.

C. ENGINEERING WORK MANAGEMENT

- Management commitment to reduction of corrective action and modification backlogs was evident in the 1998 Nuclear Engineering Department Business Plan

- Design engineering backlog was adequately characterized and tracked.

- A corrective action item and modification backlog reduction plan was developed and milestones have been established.

D. DIESEL GENERATOR ROOT CAUSE INVESTIGATION WAS THOROUGH AND WELL MANAGED

ENGINEERING CONCLUSION

The engineering organization is providing timely support for emergent technical issues. The engineering staff, procedures, programs, and processes were in place to support safe restart. Continued management attention is necessary to ensure System Engineering matures to its monitoring role.

SUMMARY

- Licensee has Strong Management Team with Good Safety Ethic.
- Appropriate Management Programs and Oversight.
- Operators Professional & Knowledgeable.
- Staff Generally Adequate and Qualified.
- Material Condition of Plant Ready.
- Programs & Processes are in Place.
- Challenges Include Completion of Corrective Action Program Improvements, Completion of the Work Control Process Implementation, Backlog Reduction, and Maturing of the System Engineering Program.

CONCLUSION

NRC Readiness Assessment Team concludes that Salem Unit 1 is Ready for Restart upon completion of required testing and emerging maintenance issues.

NRC Public Meeting
Salem 1 Restart
February 27, 1998

Dennis Zannoni
State of New Jersey (NJ)
Department of Environmental Protection
(DEP)
Bureau of Nuclear Engineering (BNE)

609 984 7440
dzannoni@dep.state.nj.us
http://www.state.nj.us/dep/rpp/bne/bneindex.htm

THANK YOU. MY NAME IS DENNIS ZANNONI. I WORK FOR THE STATE OF NEW JERSEY, DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF NUCLEAR ENGINEERING. I PARTICIPATED AS AN OBSERVER IN THE NRC'S INSPECTION WHICH IS BEING DISCUSSED HERE TODAY. THOUGH THE TEAM WORKED CLOSELY TOGETHER, MY MISSION WAS SLIGHTLY DIFFERENT. THE DEPARTMENT OF ENVIRONMENTAL PROTECTION WANTED AN INDEPENDENT ASSESSMENT CONCERNING SALEM UNIT 1'S READINESS FOR RESTART.

I WAS PART OF THE NRC'S INSPECTION TEAM WHICH REVIEWED SALEM UNIT 2'S READINESS FOR RESTART BACK IN JUNE OF 1997. THE DEPARTMENT OF ENVIRONMENTAL PROTECTION CONCLUDED THAT NO REASON EXISTED TO OPPOSE THE RESTART OF SALEM UNIT 2. OUR POSITION WAS OUTLINED IN A LETTER TO THE NRC ON JUNE 20, 1997 [1]. THE RESULTS OF OUR PARTICIPATION IN THE SALEM 2 NRC READINESS ASSESSMENT TEAM INSPECTION WERE COMPLETED JULY 27, 1997 [2].

I WANT TO THANK THE NRC TEAM LEADER, KIM VANDORN AND THE NRC TEAM MEMBERS FOR THEIR COOPERATION. IN SPITE OF MY STATE STATUS, I WAS ACCEPTED AS PART OF THE TEAM AND GIVEN COMPLETE ACCESS TO ANY INFORMATION AND STAFF NECESSARY TO COMPLETE MY REVIEW. I ALSO WANT TO THANK NRC REGIONAL ADMINISTRATOR HUB MILLER FOR PROVIDING ME THE OPPORTUNITY TO SPEAK TO ALL OF YOU HERE TODAY.

FINALLY, I WANT TO THANK PSE&G FOR THEIR COOPERATION

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[1]Letter from NJ DEP to NRC dated June 20, 1997 (Attachment A).

[2]Letter from NJ DEP to U.S. NRC dated July 18, 1997 (Attachment B).

DURING THIS IMPORTANT INSPECTION. YOUR STAFF WAS SUPPORTIVE, OPEN, AND RESPECTFUL OF MY INTRUSION INTO THEIR WORK AND YOUR PLANTS.

BEFORE I MAKE SOME BRIEF COMMENTS, IT IS IMPORTANT TO NOTE, FOR THOSE UNFAMILIAR WITH OUR PARTICIPATION IN NRC INSPECTIONS, THAT THE NJ DEP AND THE U.S. NRC HAVE AN AGREEMENT GOVERNING INSPECTION ACTIVITY [3]. IN KEEPING WITH THE SPIRIT OF THE AGREEMENT AND SINCE THE NRC INSPECTION REPORT FOR THIS INSPECTION HAS NOT BEEN ISSUED, DISCRETION WILL BE EXERCISED.

MY OBSERVATIONS ARE NOT SIGNIFICANTLY DIFFERENT THAT THOSE EXPRESSED BY THE NRC TEAM PRESENTED HERE TODAY. DURING THE INSPECTION, I SHARED INFORMATION WITH THE NRC DAILY AND MY QUESTIONS, OBSERVATIONS AND ISSUES WERE CONSIDERED DURING THE INSPECTION PROCESS. AS I NOTED EARLIER, THIS TEAM WAS VERY SENSITIVE TO MY OBSERVATIONS, ISSUES, AND CONCERNS.

THE NRC PRESENTATION REFLECTS THE EFFORT OF THE TEAM AND PROVIDED A GOOD ASSESSMENT OF THE CURRENT PICTURE HERE AT SALEM, AS WELL AS, THE DIRECTION THEY NEED TO TAKE TO IMPROVE AND MAINTAIN THE SUCCESS REACHED SO FAR.

I TOOK PART IN THIS INSPECTION WITH SPECIFIC GOALS IN MIND FOR DETERMINING SALEM 1 READINESS FOR RESTART.

OUR MANAGEMENT WANTED TO KNOW IF THE CULTURE WAS OPEN MINDED, PROMOTED A QUESTIONING ATTITUDE, ADDRESSED

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[3]Letter from U.S NRC to NJ DEP dated June 1987 (Attachment C).

PROBLEMS DIRECTLY, AND WAS DETERMINED TO FIX BROKEN EQUIPMENT. I HAVE CONCLUDED THAT THEY DO.

OUR MANAGEMENT WANTED TO KNOW IF THE STAFF IDENTIFIED AND RAISED CONCERNS, PROPERLY CATEGORIZED AND EVALUATED PROBLEMS, IMPLEMENTED CORRECTIVE ACTIONS, AND PROPERLY VERIFIED THOSE ACTIONS ARE EFFECTIVE. I HAVE CONCLUDED THAT THEY DO. IMPROVEMENT IS NEEDED IN THE AREA OF CORRECTIVE ACTION VERIFICATION. THERE IS ALSO ROOM FOR IMPROVEMENT IN THE ORGANIZATION'S UTILIZATION OF THE CORRECTIVE ACTION PROGRAM THROUGHOUT THE ORGANIZATION AND ITS SUPPORT BY MANAGEMENT.

OUR MANAGEMENT WANTED TO KNOW IF THE GOOD PRACTICES OBSERVED HERE ARE BECOMING MORE INGRAINED IN THE ORGANIZATION WHICH IS A GOOD INDICATION OF LONGER TERM SUCCESS. THINGS HAVE IMPROVED BUT THIS IS AN AREA WHICH WE WILL CONTINUE TO WATCH.

MR. VANDORN'S PRESENTATION PROVIDED AN ACCURATE DESCRIPTION OF ENGINEERING, MAINTENANCE, OPERATIONS, AND MANAGEMENT. WE OBSERVED GOOD PERFORMANCE IN THESE AREAS BUT, MORE IMPORTANTLY, EACH DISCIPLINE UNDERSTANDS WHERE THEY NEED TO IMPROVE AND HAVE PLANS TO GET THERE.

I HAVE THREE CAUTIONS.

1. ADDRESS THE GOOD OBSERVATIONS MADE BY THE NRC TEAM AND USE THIS AS AN OPPORTUNITY FOR IMPROVING YOUR ORGANIZATION. TOO OFTEN THESE HAVE BEEN MISSED OPPORTUNITIES.

2. TAKE YOUR TIME MOVING FORWARD. GOOD CAREFUL

DECISIONS MADE NOW ARE IMPORTANT AS YOU PREPARE TO STABILIZE THE ORGANIZATION AND SETTLE DOWN FOR THE LONG TERM OPERATIONS OF ALL THREE UNITS.

3. AS YOU MAINTAIN YOUR FOCUS AND CONTINUE TO HOLD STAFF ACCOUNTABLE YOU NEED TO CONTINUE TO WORK HARD UNTIL THE POSITIVE CHANGES NECESSARY FOR LONG TERM SUCCESS HERE ARE INGRAINED INTO THE ORGANIZATION.

WE WILL STAY INVOLVED.

THE MESSAGE I WILL TAKE BACK TO MY MANAGEMENT AND INTERESTED PARTIES WILL BE POSITIVE.

Attachment A

State of New Jersey

Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

June 20, 1997

Hubert Miller, Region I Administrator
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pa. 19406

Dear Administrator Miller:

The Department of Environmental Protection's Bureau of Nuclear Engineering has been actively involved with the Salem Unit 2 startup process since the NRC issued the June 9, 1995 Confirmatory Action Letter. This shutdown period provided an opportunity for PSE&G and the NRC to address long standing management, equipment, cultural, and corrective action concerns. Our involvement in the review, observation of NRC inspections and technical review of various safety and non-safety related issues has prepared us to make some judgements concerning PSE&G's restart of Salem Unit 2 and the NRC's regulatory effectiveness concerning Salem Unit 2. Since the NRC will soon determine whether or not Salem Unit 2 is ready for restart, the Department of Environmental Protection has prepared this letter for your consideration.

As you know, we have devoted a lot of attention to this very important process. We have reviewed 20 technical and programmatic Salem Unit 2 restart issues, observed 12 NRC inspections and 6 NRC inspections associated with the State's list of issues, attended 10 NRC Salem Unit 2 Assessment Panel meetings, attended 25 PSE&G Management Review Committee meetings, formally met with PSE&G 4 times and the NRC 6 times and recently completed participation in the NRC Readiness Assessment Team Inspection. Additional time was spent in preparation for the meeting, briefing our upper management, and formulation of our issues list.

Overall PSE&G has changed for the better. In fact, most plant improvement processes, management and equipment have dramatically improved. This is evidenced, in part, by a good corrective action program which is utilized throughout the organization and supported by management. Most importantly, the new management team has made solid progress to support continued safe operation of Salem 2. The new culture is open-minded, promotes a questioning attitude, addresses problems directly, and is determined to fix broken equipment. We recognized that important and substantive change has occurred by PSE&G for Salem 2 and we do not have any reason to oppose the restart of Salem Unit 2.

Some areas exist which require continued vigilance by PSE&G so that the positive changes remain in place especially during plant operation. PSE&G must continue to demonstrate a strong ability to identify and raise concerns, properly categorize and evaluate problems, implement corrective actions, and properly verify that actions are effective. Management must

demonstrate a continued commitment to promote an open-minded culture, and maintain a stable work force. There are specific issues with generic implications that the state would like to see effectively resolved, e.g. the fire protection issue.

The NRC regulatory attention was effective in our judgement. A substantial level of attention, involvement, review and support by the NRC was applied to the Salem 2 restart process. After your appointment as Regional Administrator, we experienced better interaction, more fruitful involvement and recognized your increased attention to the restart of Salem 2 as a high priority. This was highly visible in the quality, number of staff devoted to this activity and use of contractors, in spite of budgetary constraints. The Salem Assessment Panel process was comprehensive, effective and well supported by the NRC. Increased involvement by NRR helped to effectively address mutual issues raised by Region I and those by NRR. This proved to be a more effective approach when dealing with issues that required coordinated attention.

Overall, during the Salem restart effort, the proper resources were provided, the right staff reviewed the critical issues, and the RATI provided an objective look at the condition of Salem 2 in order to confirm Salem Unit 2's readiness to restart. In keeping with the spirit of our MOU, our specific RATI conclusions will not be discussed here but our preliminary results reveal that a strong confirmation exists to suggest that reasonable assurance exists for the safe startup of Salem 2. But caution is required and we recommend that increased oversight by NRC remain until it can be ascertained that the changes made at PSE&G NBU are ingrained into the organization.

Our next step is to remain involved. Salem 1 still needs to restart and we want to ensure that many of the practices started at the NBU remain in place for the longer term. I hope that our participation has contributed to support safe operation and help build public confidence. It is our intention to share our comments with the NRC Commission directly June 25, 1997 when the NRC Commission is briefed by the NRC and PSE&G about the status of Salem 2 restart.

Please contact me if you have any questions or would like to discuss these comments further.

Sincerely,

Jill Lipoti

Jill Lipoti, Ph.D.
Assistant Director
Radiation Protection Programs
NJ DEP

c: Director Gerald P. Nicholls, Ph.D., NJ DEP
John Zwolinski, NRC
John Hoyle, NRC

Attachment B

State of New Jersey

Department of Environmental Protection

hristine Todd Whitman
overnor

Robert C. Shinn, Jr.
Commissioner

July 18, 1997

Mr. Hubert Miller
Regional Administrator
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Dear Sir:

Subject: Salem Unit 2
Docket No. 50-311
Restart Assessment Team Inspection (RATI)

The New Jersey Department of Environmental Protection's Bureau of Nuclear Engineering (BNE) recently completed its observation of the NRC's RATI for Salem Unit 2. This letter provides our feedback.

During the inspection team's preparation week, two BNE personnel met with the team and provided issues that the BNE requested to be addressed in the scope of the inspection. The team was receptive to this input and it was accommodated accordingly. By participating during this preparation week, the BNE personnel began the inspection with an awareness of the plans and schedules for the two weeks of inspection. This allowed the BNE to better plan its observations during the inspection.

Our two person observation of the RATI afforded us an opportunity to confirm our belief that PSE&G's efforts to improve Salem have been effective. The RATI was a good means of focusing the integration of changes made throughout the organization and the plant over a two year period. By participating in interviews, plant walkdowns, observation of problem solving sessions, control room activities, and various management meetings, we were able to

see the day to day safety consciousness of PSE&G and how the corrective action process is becoming the norm throughout the organization.

During the inspection, the team leader and team members were receptive to our input, respected our interests and opinions, and effectively followed up on several issues that emerged during the inspection.

As stated by Dr. Lipoti at the Commissioners' briefing we are anticipating a successful restart of Salem Unit 2, but continued vigilance on the part of PSE&G and the NRC is essential. It is our intention to stay actively involved during the Salem Unit 2 process and continue to participate, as necessary, during the Salem 1 restart process.

Feel free to contact me if you have any questions.

Sincerely,

Kent W. Tosch

Kent W. Tosch, Manager
Bureau of Nuclear Engineering

c: Jill Lipoti
Assistant Director, Radiation Protection Programs
N.J. DEP

Dennis Zannoni, Supervisor, Nuclear Engineering
N.J. DEP

Curtis Cowgill, RATI Team Manager
U.S. NRC

Attachment C

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

Richard T. Dewling, Ph.D., P.E.
Commissioner
Department of Environmental
Protection
401 East State Street
CN 402
Trenton, New Jersey 08625

Dear Commissioner Dewling:

This letter is to confirm the general agreement reached as the result of our meetings with Dr. Berkowitz and his staff regarding the surveillance of the nuclear power plants operating in New Jersey. During those meetings we agreed that there was a need to have a more formal way of coordinating NRC and State activities related to plant operations and that the Department of Environmental Protection's Bureau of Nuclear Engineering (BNE) will be the interface with the NRC on a day-to-day basis.

The areas addressed by this letter are:

1. State attendance at NRC meetings with licensees relative to licensee performance, including; enforcement conferences, plant inspections and licensing actions.

2. NRC and BNE exchanges of information regarding plant conditions or events that have the potential for or are of safety significance.

We agree that New Jersey officials may attend, as observers, NRC enforcement conferences and NRC meetings with licensees, including Systematic Assessment of Licensee Performance (SALP) reviews, with respect to nuclear power plants operating in New Jersey (PSE&G, GPUN). We shall give timely notification to the BNE of such meetings, including the issues expected to be addressed. Although I do not expect such cases to arise frequently, we must reserve the right to close any enforcement conference that deals with highly sensitive safeguards material or information that is the subject of an ongoing investigation by the NRC Office of Investigation (OI), where the premature disclosure of information could jeopardize effective regulatory action. In such cases, we would brief you or your staff after the enforcement conference and would expect the State to maintain the confidentiality of the briefing.

With regard to NRC inspections at nuclear power plants in New Jersey, we agree that the BNE staff may accompany NRC inspectors to observe inspections. To the extent practicable, NRC will advise the State sufficiently in advance of our inspections such that State inspectors can make arrangements to attend. In order to assure that those inspections are effective and meet our mutual needs, I suggest the following guidelines:

1. The State of New Jersey will make arrangements with the licensee to have New Jersey participants in NRC inspections trained and badged at each nuclear plant for unescorted access in accordance with utility requirements.

2. The State will give NRC adequate prior notification when planning to accompany NRC inspectors on inspections.

3. Prior to the release of NRC inspection reports, the State will exercise discretion in disclosing to the public its observations during inspections. When the conclusions or observations made by the New Jersey participants are substantially different from those of the NRC inspectors, New Jersey will make their observations available in writing to the NRC and the licensee. It is understood that these communications will become publicly available along with the NRC inspection reports.

With regard to communications, we agree to the following:

1. The NRC shall transmit technical information to BNE relative to plants within New Jersey concerning operations, design, external events, etc.; for issues that either have the potential for or are of safety significance,

2. The NRC shall transmit all Preliminary Notifications related to nuclear plant operations for New Jersey facilities to the BNE routinely.

3. The BNE shall communicate to the NRC any concern or question regarding plant conditions or events, and any State information about nuclear power plants.

Please let me know if these agreements are satisfactory to you.

Sincerely,

W. T. Russell

William T. Russell
Regional Administrator

Bureau of Nuclear Engineering

FY-98 & FY-99

PROGRAM FUNCTION **Section responsible**	**PRIORITIES**
NUCLEAR EMERGENCY RESPONSE **Nuclear Emergency Preparedness Section**	• Ingestion Pathway Exercise and development of generic plan for State's to use the Federal Radiological Monitoring and Assessment Center • Change emergency response planning under FEMA strategic plan • Change emergency response planning under decommissioning • Requisite planning changes for the varied responses Nuclear Emergency Response Act (N.J.S.A. 26:2D-37 et seq.)
NUCLEAR EMERGENCY FACILITY MAINTENANCE AND TRAINING **Nuclear Emergency Preparedness Section**	• Training of State and local responders for a FRMAC response • Facility changes and facility designation for a full FRMAC response • Electronic infrastructure changes at facility to improve communications and flexibility during a response. Nuclear Emergency Response Act (N.J.S.A. 26:2D-37 et seq.)
NUCLEAR PLANT SAFETY REVIEW (SHOLLY) **Nuclear Engineering Section**	• Strategic reviews of Salem Restart changes • License review through the decommissioning process • Review and comment on the long term storage of spent fuel in dry cask or spent fuel pool at Oyster Creek Public Law-415 for "No Significant Hazard Determination"
NUCLEAR PLANT INSPECTIONS **Nuclear Engineering Section**	• Salem Restart inspections • Increased Team inspections w/NRC at Oyster Creek and Hope Creek NRC/Department of Environmental Protection (MOU)
NUCLEAR POWER PLANT ENVIRONMENTAL SURVEILLANCE **Nuclear Environmental Engineering Section**	• Develop IFB for analytical services for environmental surveillance • NEPPS the environmental program and work with EPA to support radiological monitoring • Train on new methods used for decommissioning (MARSSIM) Nuclear Emergency Response Act (N.J.S.A 26:2D-37 et seq.)
CREST SYSTEM **Nuclear Environmental Engineering Section**	• Migrate from VAX to PC for telemetry data. • Repositioning of the Real time monitoring system to reflect operational changes. Nuclear Emergency Response Act (N.J.S.A. 26:2D-37 et seq.)
NUCLEAR WASTE TRANSPORT **Office of the Bureau Chief**	• Northeast Task Force develops a position for funding for training personnel for increased waste transports. • Draft Policy statements for the safe transport of high level waste in New Jersey. (Governor's designee for Highway Route Control Quantity shipments, 10CFR70 &73)

Public Service Electric & Gas

It's All About Safety

Safety, Reliability and Cost-Effectiveness

Through People

The Power of Commitment

PSE&G

Agenda

• Readiness to Restart	Chris Bakken
• Areas for Management Attention	Chris Bakken
• Journey to Excellence	Harry Keiser

Readiness to Restart Salem Unit 1

Chris Bakken

General Manager - Salem Operations

We Stayed the Course

- Salem Restart Plan
- Successful Start-up of Unit 2
- Equipment Performance
- Operators Have Confidence

Readiness to Restart

- Unit 1 Is Ready for Restart
- Start-up Test Program
- Implemented Unit 2 Lessons Learned

Improvement Areas

- Human Performance
- Supervisory Involvement
- Corrective Action Program
- Backlogs
- 12-Week Work Process
- System Engineering Process

Unit 1 Restart

- Controlled
- Deliberate
- Focused on Safety

NBU Plants, Processes, and People Are Ready for Three Unit Operation

Journey to Excellence

Harry Keiser

Executive Vice President - Nuclear Business Unit

Journey to Excellence

- Safety Conscious Work Environment
- Find It - Fix It
- Restart Only When We Can Operate Safely and Reliably
- Event-Free Operation

Journey to Excellence

- Excellence Is Achieving Top Quartile Performance in:
  - Safety
  - Reliability, and
  - Cost-Effectiveness
- Through People

Cornerstones of Excellence

- People
- Plant
- Processes

→ 3Ps

Safety, Reliability and Cost-Effective Operations through People

We Are Ready to Restart Salem Unit 1 With Our Plant, People, and Processes

UNITED ASSOCIATION
of Journeymen and Apprentices of the
Plumbing and Pipe Fitting Industry of
the United States and Canada

Founded 1889

Letters should be confined to one subject

Martin J. Maddaloni
General President

Michael A. Collins
General Secretary-Treasurer

C. Randal Gardner
Assistant General President

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February 27, 1998

My name is John Czerwinski, Business Manager, of Local 74 Plumbers & Pipefitters based in Wilmington, Delaware. I am here today to speak in support of the restart and continued operation of the Salem Generating Station.

Our Local, along with Local Union 322, and the Delaware and New Jersey Building Trades, are very familiar with the operation of Salem Station. Over the years, many of our members, including myself, have worked there, first of all in the original construction and, in recent years, in the refurbishing of all three units.

This facility has significant economic impact, not only in Salem County, New Jersey, but in the entire region. In addition to our members, many of the operating personnel live in Delaware. PSE&G has demonstrated that it has made the commitment to change through the successful start-up of Salem Unit II and the continued safe operation of Hope Creek. I believe we will see the same performance on Salem Unit II.

PSE&G has set new standards for personnel performance and has built a culture that wants to do a good job. Our members are proud to be a part of that team.

We urge the continued operation of Hope Creek and Salem II and the start-up of Salem Unit I as soon as possible.

Sincerely,

John J. Czerwinski
Business Manager
Local Union #74