ENCLOSURE 1

FINAL SALP REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NO. 50-277/88-99
50-278/88-99

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION

UNITS 2 AND 3

ASSESSMENT PERIOD: AUGUST 1, 1988 - JUNE 30, 1989

BOARD MEETING DATE: AUGUST 14, 1989

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) is an integrated Nuclear Regulatory Commission (NRC) staff effort to collect observations and data on a periodic basis and to evaluate licensee performance on the basis of this information. The SALP process is supplemental to normal regulatory processes used to ensure compliance to NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful feedback to the licensee's management to improve the quality and safety of plant operations.

An NRC SALP Board, composed of the staff members listed below, met on August 14, 1989 to review the collection of performance observations and data to assess the licensee's performance at the Peach Bottom Atomic Power Station. This assessment was conducted in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." The criteria and guidance for this assessment are provided in Attachment 1 of this report. The NRC Board's findings and recommendations were forwarded to the Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at the Peach Bottom Atomic Power Station for the period August 1, 1988, through June 30, 1989. The summary findings and totals reflect an 11-month assessment period.

The SALP Board for the Peach Bottom Station assessment consisted of the following individuals:

Chairman

W. Kane, Director, Division of Reactor Projects (DRP), Region I

Members

J. Linville, Chief, Projects Branch No. 2, DRP
R. Gallo, Chief, Operations Branch, Division of Reactor Safety (DRS)
L. Doerflein, Chief, Reactor Projects Section 2B, DRP
R. Martin, Project Manager, Office of Nuclear Reactor Regulation (NRR)
T. Johnson, Senior Resident Inspector, Peach Bottom
E. Greenman, Director, DRP, Region III
W. Butler, Director, Project Directorate I-2, NRR
J. Joyner, Project Manager, Division of Radiation Safety and Safeguards (DRSS)

Others

R. Keimig, Chief, Safeguards Section, DRSS
R. Urban, Resident Inspector, Peach Bottom
L. Myers, Resident Inspector, Peach Bottom
J. Durr, Chief, Engineering Branch, DRS
T. Dragoun, Senior Radiation Specialist, DRSS
W. Lazarus, Chief, Emergency Preparedness Section, DRSS
E. Sylvester, Physical Security Inspector, DRSS

II. BACKGROUND

A. Licensee Activities

Peach Bottom Units 2 and 3 were issued operating licenses on October 25, 1973 (DPR-44), and July 2, 1974 (DPR-56), respectively. Unit 2 began commercial operation during July 1974 and Unit 3 began commercial operation during December 1974. Units 2 and 3 are boiling water reactor (BWR) systems supplied by the General Electric Company and have a Mark I type containment.

At the beginning of the period, both units were shut down in accordance with the NRC Order of March 31, 1987. During the period, Unit 2 completed its refueling outage which began in March 1987. The NRC modified the Order on April 26, 1989, allowing Unit 2 to startup and increase power to 35%. Criticality was achieved on April 27, 1989, and the licensee began their restart power testing program. Unplanned shutdowns occurred on April 27 and May 11, 1989, to make equipment repairs and a scram from 20% power occurred on May 19, 1989. The NRC further modified the Order effective June 28, 1989, allowing power to be increased to 70%. At the end of the period, Unit 2 was at 45% power.

Unit 3 completed its pipe replacement outage in August 1988. During the remainder of the assessment period, Unit 3 remained defueled in a maintenance outage status.

Attachment 2 further details a summary of facility operations.

B. NRC Inspection and Review Activities

Three NRC resident inspectors were assigned to the site during the assessment period. The total NRC inspection time expended during the eleven-month assessment period was 8154 hours or 8895 hours on an annualized basis. Distribution of these hours is shown in Table 1.

Team inspections were conducted as follows:

-- Emergency operating procedures (August 1988)
-- Plant procedures and non-licensed operator training (August 1988)

-- Emergency Plan Exercises (September 27, 1988 and June 14, 1989)
-- Modification and Surveillance programs (September 1988)
-- Simulator Evaluations of Control Room Operator Crews (August 1988 to January 1989)
-- Assessment of Licensee Readiness for Restart (November 1988)
-- Special Security Inspection (January 1988)
-- Integrated Assessment Team Inspection (February 1989)
-- Special Restart Inspections (April to June 1989)
-- Special Electrical Inspections (February and April 1989)

The NRC continued its Peach Bottom Restart Review Panel concept during the assessment period. Activities included: review of the PECo restart plan; issuance of a Safety Evaluation Report on October 19, 1988, which approved the PECo restart plan; conducting public meetings in the Maryland and Pennsylvania local counties; making a presentation to the NRC Advisory Committee on Reactor Safeguards; briefing the NRC Commission on Peach Bottom restart readiness; and, monitoring restart activities.

NRC Chairman Lando Zech visited Peach Bottom on March 14, 1989, and Commissioner James Curtiss visited Peach Bottom on March 27, 1989.

III. SUMMARY OF RESULTS

Overview

Corporate and plant management changes made during the previous assessment period have proven beneficial and effective in improving overall performance that was noted this period. The operations organization has proven that it can function effectively in an operating environment. Operations line management has provided effective oversight of operational activities. The Shift Managers continued to perform effectively in directing the restart of Unit 2 and are fully integrated into the licensee's management team. The licensed operators have demonstrated that they can effectively and safely operate the plant at power using strong procedural compliance.

Corporate and plant management also have effected a significant turnaround in performance in the security and safeguards area. The high quality of the current program was confirmed by a substantial inspection effort in this area. This significant turnaround can be attributed in part to a new security force contractor, but is primarily due to strong senior management support of the program combined with strong oversight and implementation by the new site nuclear security specialist.

Other noted improvements during the period include station housekeeping and material condition, overall radiation dose reduction and revised ALARA programs, self-assessment capability, and performance of maintenance.

Management involvement and support in some areas has at times been weak. In the last assessment period, the licensee demonstrated strong performance in the engineering/technical support area which was primarily due to the impressive performance on the Unit 3 pipe replacement project. However, during this assessment period, the NRC noted weaknesses in performance of and support for some engineering projects including environmental qualification, electrical engineering, and modifications. Another weak area noted during this assessment was corporate technical assessment activities and management support for health physics training programs and training facilities. Although the site emergency planning organization was able to function and perform well this was accomplished without strong support and direction from corporate.

Overall, management has continued to institutionalize the changes made subsequent to the shutdown and needs to focus its efforts to assure that the momentum is maintained in all areas.

B. Facility Performance Analysis Summary

Functional Area	Rating Last Period (6/87 - 7/88)	Rating This Period (8/88 - 6/89)	Trend
Plant Operations	2	2	Improving
Radiological Controls	2	2	
Maintenance/Surveillance	2, Improving	2	
Emergency Preparedness	2	1	
Security and Safeguards	3	2	Improving
Engineering/Technical Support	1	2	
Safety Assessment/ Quality Verification	2	2	

C. Plant Scrams and Unplanned Shutdowns (Unit 2)

Event Date	Power	Description	Root Cause	Functional Area
1.		An unplanned shutdown was made to repair three malfunctioning intermediate range monitors (IRM) during reactor startup.		
4/27/89	0%		Random component failure; IRM detectors	N/A
2.		An unplanned shutdown was made to replace a malfunctioning safety relief valve (SRV) which was slow to reclose.		
5/11/89	0%		Random component failure; SRV malfunction	N/A
3.		An automatic reactor scram on low water level occurred when the feedwater level control system (FWLCS) three element to single element switch failed, resulting in a trip of the operating reactor feedwater pumps.		
5/19/89	20%		Random component failure; FWLCS switch	N/A

N/A - No performance issues were identified by the SALP Board to assign a functional area.

IV. PERFORMANCE ANALYSIS

A. Plant Operations (3953 hours; 48%)

1. Analysis

During the previous assessment period, the licensee's performance in plant operations was rated Category 2 during a period when the plant was shut down. The establishment of a Shift Manager and personnel changes in operations line management appeared to be improvements. However, these changes had not been tested in an operating environment. Training to "rehabilitate" licensed operators was noted as being effective. Licensed operator staffing levels increased. Weaknesses were noted relative to LER quality and timeliness, fire brigade training and events caused by equipment control deficiencies.

During the current assessment period, resident, specialist and special team inspections reviewed plant operations during shutdown, refueling, startup and power operating conditions. Special team inspections reviewed operations including operator crew evaluations on the simulator, emergency operating procedures (EOP), pre-startup integrated assessment team inspection (IATI), and Unit 2 special restart inspections. Around-the-clock control room coverage occurred for three consecutive days during the IATI in February 1989, and again during restart team inspections from April 26 to June 2, and from June 28 to June 30, 1989.

Shift Manager leadership continues to be a licensee strength. They are an important part of the overall management team. The Shift Managers have demonstrated effective oversight of control room activities during simulator evaluations, emergency plan exercises, actual off normal events, special evolutions and tests, and the Unit 2 restart power testing program. Shift communications within each operating shift crew and between shifts has improved during the period.

Plant and operations line management are involved in day-to-day activities. Management presence in the control room during routine and off normal conditions has provided effective leadership. During the initial portion of the Unit 2 restart power testing program, the Plant Manager conducted holdpoint meetings. During these meetings, plant management reviewed equipment and personnel performance and assessed their readiness prior to proceeding to the next higher plateau.

Licensed operator performance during shutdown and operating conditions was effective. Response to alarms and off-normal conditions was conservative and in accordance with procedures. Shift turnover, log keeping, control room formality and behavior were in accordance with acceptable standards and requirements. An Operations Manual was developed to define and promulgate operator performance expectations. This manual has been well received by operators. Improvements in operator performance, procedural compliance and effective corrective actions for previous events have resulted in significantly fewer operator caused events. One automatic scram and two unplanned shutdowns were due to equipment failures. Operator performance during the scram was effective.

The operations department demonstrated an effective self-assessment capability for event follow-up. Shift and operations management are able to diagnose problems, perform follow-up including event critiques and incident reports, determine root causes and implement corrective actions. Prior to restart, a number of personnel errors by non-licensed operators resulted in

reportable events. The licensee was timely in recognizing the problem, and the Plant Manager personally reviewed all of these related events. Effective corrective actions reduced the number of these events.

Four of six operating shift crews were observed during requalification training on the Peach Bottom simulator. Weaknesses were noted in the conduct of the training and in licensed operator performance. These performance weaknesses included operator skill proficiency and Shift Supervisor use of EOPs. These deficiencies were recognized by the licensee, but their significance was not. The licensee's readiness self-assessment also did not appreciate the significance of these performance issues (see section IV.G).

Subsequent simulator evaluations were conducted for all six crews to assess operator ability to properly respond to transients and to assess shift supervisor command and control and shift manager leadership. One shift crew and one shift supervisor from a second crew did not perform satisfactorily. Licensee training assessment was weak in that the poor performance of the shift crew was not initially recognized. After additional training, subsequent assessments for these two crews were satisfactory. Overall, the Shift Supervisors' command and control function was the weakest part of each crew. Performance of Chief Operators, Shift Technical Advisors (STAs) and Shift Managers were the strengths of each crew.

At the end of the assessment period, the licensee had 18 senior reactor operators (SRO) and 24 reactor operators (RO) with active licenses on a six-shift rotation. This provided three SROs and four ROs per shift which is one more SRO and one more RO than required by Technical Specifications. Due to the addition of extra licensed personnel, operator overtime was minimal and effectively controlled. During the period, only one license reexamination was given and the candidate successfully passed.

The licensee is conservative with regard to immediate emergency notification system reports to the NRC. Licensee event reports (LER) were generally of good quality and were timely. This is a noted improvement since the last SALP period. Specific LER comments are described in section D of the Supporting Data and Summaries of this report. The management of the LER system is now on site and this has been a beneficial change because LER quality and timeliness has improved.

During the period procedure adherence by licensed operators has been excellent. A program to revise all system operating procedures was undertaken by the licensee. Some key new system

procedures were initially scheduled for completion after Unit 2 restart. The licensee revised their schedule and completed these key procedures prior to restart. These procedures are of good quality and operators effectively use them. However, non-licensed operator (NLO) procedure adherence was a weak area prior to restart. The NRC identified several examples during the assessment period where NLOs failed to adhere to operating and test procedures. Since restart, no further instances were noted. Emergency operating procedures (EOP) were reviewed during a team inspection. EOPs were evaluated to be satisfactory and conformed to NRC guidelines. EOP weaknesses included a lack of administrative controls and a lack of verification and validation of selected contingency procedures. Strengths included equipment pre-staging and general operator familiarity and comfort with the EOPs.

The licensee developed a restart power testing program that was consistent with commitments made to the NRC. The management philosophy displayed during restart testing was that schedule was secondary to safety and quality. The restart program was well managed and effectively implemented. Required tests were conducted in accordance with approved procedures, and met procedural requirements. All test nonconformances were properly reviewed by cognizant plant personnel and related corrective actions were implemented adequately and in a timely fashion. Management oversight during restart activities was effective. The program relied on the licensee's independent organizations to assess performance. The Nuclear Quality Assurance (NQA) organization's involvement and oversight during the restart was good.

The licensee has been performing the required training for licensed operators with restricted licenses during the restart power testing program. Operators performed the required reactivity manipulations and completed some of the required time on shift above 20% power. The licensee was slow in the development and implementation of follow-up interaction training for licensed and non-licensed operators, and incorporation of attitude improvement training into operator progression training.

In response to concerns during the previous assessment period, the licensee adequately implemented corrective actions. Improvements in quality and timeliness of fire brigade training has resulted in a qualified and adequately staffed fire brigade. The licensee has modified and enhanced their equipment control procedures. Revisions to the blocking system (equipment tagouts) have been effective in reducing errors and reportable events.

In summary, Shift Managers and operations line management have provided effective oversight of operational activities during shutdown, pre-startup and restart power testing periods. The licensee has an ample number of licensed operators and operator performance has been effective. Prior to restart, some operator performance weaknesses were noted during the NRC simulator evaluations, but retraining was effective in eliminating these deficiencies. In addition, licensee assessment was weak in that poor performance of a shift crew was not initially recognized. Procedural compliance by licensed operators was strong. The licensee has demonstrated an effective self-assessment capability of operational events. The Unit 2 restart power testing program was well planned, and effectively managed and conducted.

2. Performance Rating - Category 2, Improving

3. Board Recommendations

Licensee: Continue to progress toward meeting operator resource development and cultural related commitments such as staffing levels, career paths, and off-shift rotational assignments.

B. Radiological Controls (452 hours; 6%)

1. Analysis

The performance in this area was previously rated as category 2. The chemistry control program performance had been excellent and the handling of radioactive waste significantly improved. The Radiation Protection programs were adequate with weaknesses noted in training and ALARA programs.

In the current period there were three core inspections, one liquid and gaseous effluents inspection, an Integrated Assessment Team Inspection (IATI) and numerous resident inspections. A management meeting was held in the NRC offices on November 8, 1988, to present dose results of the Unit 3 pipe outage. There were two violations involving failure to follow procedures.

a. Radiation Protection

In the Restart Plan submitted in April 1988, the licensee committed to conduct self assessments of the HP programs and to take lasting corrective actions. Aggressive corporate team HP assessments were conducted during the first few months of this SALP period. However, these assessments soon degraded when two key corporate

individuals were reassigned or left and were not replaced. Currently, evaluations are being performed by a junior corporate radiological engineer. Findings are now redirected to lower levels of management and are no longer formally tracked as station management action items. These changes reduced the quality and effectiveness of the licensee's self assessments.

The station initiated a management-by-walking-around (MBWA) policy that has improved housekeeping, radiological postings, and the amount of contaminated floor area. However, the individuals conducting the MBWA inspections apparently have not focused on program implementation since the procedural violations and poor contamination control practices, such as those noted during the IATI described below, and were not identified by the licensee.

In-field implementation of HP programs is generally adequate. However, during the IATI, review of RORs identified that radiation worker procedural deviations, RWP noncompliance, and contamination control concerns continued to occur. Examples of poor radiological work practices were observed by NRC inspectors, such as working in potentially contaminated areas with bare hands. The licensee responded by adding specialized training and instructing HP technicians to be more observant of poor radiation worker practices. The NRC noted improved performance in this area during the latter part of the assessment period.

The Radiological Occurrence Report System (ROR) has improved in that corrective actions are now expedited by the HP Operations Group. Corrective actions that used to take months to complete are now being completed in weeks. However, the corrective actions are not getting independent review by supervision from other departments to ensure that root causes are addressed. Audits conducted by the NQA Department as part of the Quality Assurance program continue to be effective. However, overall involvement and control by upper management in independently assessing quality and achieving excellence in radiation safety programs became noticeably less aggressive during this SALP period.

There was a good effort to reduce reliance on contractors this period and the number of contracted HP technicians was reduced. The licensee obtained certification of the in-house personnel dosimetry system which is now the licensee's exclusive program for whole body monitoring. The maintenance and testing of respirators is now done by permanent staff.

After the reorganization and personnel transfers that occurred during the previous SALP period, all key positions in the HP department are now filled and responsibilities are defined. Improvement was noted in the operational HP area due to increased supervision and appointment of a new Senior Health Physicist (Radiation Protection Manager) with an operational background. Relations with other departments on site, a prior weakness at this station, continue on an improving trend. A segment of the HP technician staff was found lacking in Peach Bottom "at power" operating experience. A special training program was completed prior to Peach Bottom restart. After restart, management conducted diagnostic testing of the staff to detect weaknesses and initiated remedial training. However, the training programs generally have been weak. For the past few years the effectiveness of the site's HP training programs have been severely impacted by lack of dedicated classroom space, training laboratories, experience, challenging performance goals, and also by poor training staff morale. General Employee Training, HP technician progression training, and HP technician refresher training programs were weak. A reorganization last assessment period resulted in improvement in developing lesson plans but the weaknesses with facilities, staffing, and equipment remain unresolved. At NRC request, milestones for progress were established. However, target dates are scheduled for 1990 and beyond. Performance in this area was weak during this SALP assessment period.

ALARA performance during the Recirculation Pipe Replacement Project on Unit 3 was outstanding. A new industry benchmark for low total job exposure was set during this extensive project involving highly radioactive components. However, the entire HP staff and work force on this project were contractors with direction provided by corporate Nuclear Engineering. The station retained some of the HP personnel from the project and are attempting to incorporate some of the effective techniques into the station ALARA program. Significantly improved planning and coordination occurred during the performance of work with high exposure potential, such as control rod drive removal and repair, steam dryer lug repair, and PIP/LPRM detector replacement. For these jobs, thorough worker training, incentive clauses for contract workers, and good supervisory oversight during the work resulted in exposures well below projections. The station goal for 1989 began at 1000 man-rem (two units) but was revised downward to 839 man-rem at midyear. This constitutes better than average

performance for a BWR. Station and corporate management support for ALARA appears to have improved during this period.

b. Solid Radioactive Waste Management and Shipping

During this assessment period one inspection of the licensee's solid radioactive waste program, including processing, preparation, packaging, and shipping, was performed. The corrective actions taken in response to QA audit findings in the area of training were strong and comprehensive during the third and fourth quarter of 1988. Implementation of the QA/QC program was effective. The overall evaluation of this area is that the solid radioactive waste management and shipping programs effectively support plant operations and continue to improve. The licensee has successfully reduced the volume of on-site radioactive waste.

c. Effluent Control Programs

The licensee's capability to control gaseous and liquid effluents with respect to Technical Specifications and other regulatory requirements was reviewed. Two items were identified during the assessment period: (1) a weakness in the licensee's Off Site Dose Calculation Manual (ODCM) (Rev.2), which required calculating doses to the bone of an adult rather than doses to sensitive organs; and (2) discrepancy in the thyroid dose calculation between the semiannual report and the annual report. The licensee was prompt and thorough in resolving these concerns. Overall performance of the effluent control programs is good.

d. Radiological Environmental Monitoring Program

The radiological environmental monitoring program was reviewed, including audits, QA/QC of the analytical laboratory, meteorological monitoring program, and annual report. The licensee thoroughly and professionally performed all aspects of the above areas. The licensee is maintaining an effective program in this area.

e. Summary

Performance of the chemistry and radwaste programs remained strong while radiation protection programs showed some improvements. Improvements have been noted in housekeeping; and in the reduction of contaminated areas and volume of on-site radioactive waste. The licensee has initiated ALARA program improvements which have resulted in Peach Bottom achieving the lowest dose since initial operation. Weaknesses persist in areas of training, self-evaluations, and review of RORs for root causes

2. Performance Rating - Category 2

3. Board Recommendations:

Licensee: Strengthen corporate support of radiological controls in order to better assess performance and management support to improve training and facilities.

C. Maintenance/Surveillance (1061 hours; 13%)

1. Analysis

The previous performance rating for Maintenance/Surveillance was Category 2, improving. During that assessment period, the reorganized Maintenance/Instrumentation and Controls (I&C) Section, along with rewritten maintenance, I&C, and surveillance procedures were considered enhancements that would further strengthen performance. Corporate and plant management involvement in the maintenance area was ample. QA/QC oversight of maintenance and surveillance was effective. Training, testing and qualification of maintenance and I&C personnel were good. However, improvements were needed in various areas of the Inservice Testing (IST) program and aggressive action was needed to reduce and maintain a low maintenance backlog.

During this period, maintenance and surveillance activities were reviewed during routine resident and region-based inspections. In addition, maintenance and surveillance activities were reviewed as part of the NRC Integrated Assessment Team Inspection (IATI) that was conducted prior to Unit 2 restart. Maintenance and surveillance activities were also reviewed during special restart inspections.

The Maintenance/I&C Section has been functioning in its reorganized state for approximately one year. Two organizational changes that occurred during the period were the merger of I&C and maintenance engineers under one supervisor,

and the addition of the Planning and Scheduling group. Staffing levels within the Maintenance/I&C Section are good and the previously noted large number of vacancies within the entry-level craft and I&C positions have been reduced.

Maintenance/I&C demonstrated commendable intrasectional interfaces in the areas of failure tracking and analysis, preventive maintenance and planning. Also, interface with the operations and health physics departments has improved. Adequate coordination was evident with the on site Technical Section. Involvement of corporate and station engineering with the motor operated valve analysis testing system (MOVATS) group was effective. Communications with corporate engineering is good, and Engineering Work Requests are being generated as needed.

The large backlog of corrective and preventive maintenance work items noted in the prior period has been substantially reduced during this period. The creation of the Planning and Scheduling group had a direct impact on reducing this backlog.

This group schedules, tracks and prepares all on site maintenance request forms. The current system is functioning well and the licensee has been able to effectively manage the maintenance backlog.

Some of the major work activities accomplished during the period were repair of the Unit 3 steam dryer, replacement of both cracked Unit 3 reactor pressure vessel (RPV) shroud access cover plates, and MOVATS and valve operator test and evaluation system (VOTES) testing of numerous motor operated valves. Repair of the steam dryer was well planned and special procedures were written to conduct the repair. QA audit of the contractor performing the work was well done and thorough. Replacement of the RPV shroud access cover plates was conducted effectively, QC verification of essential operations was extensive and the QA audit was detailed. The licensee was conservative when it reworked one access cover after final inspection revealed a larger gap than expected, even though engineering analysis determined that the as-left gap was acceptable. MOVATS and VOTES testing exceeded the amount of work required in response to NRC Bulletin 85-03.

The surveillance test (ST) program is administered by the on site Technical Section. The section was reorganized during the middle of the assessment period and is comprised of Regulatory, Systems and Technical Support groups. An ST coordinator in the Technical Support group tracks and schedules STs using the Surveillance Test and Records System (STARS) computer program. Control and tracking of ST procedures were generally well done.

However, the NRC noted several instances in which out of date ST procedures were in use. Once this concern was raised to licensee management, corrective action was taken to preclude a recurrence of this problem.

During this assessment period, I&C surveillance procedures were completely rewritten and renamed "SI" procedures. The NRC noted numerous problems during first time performance of these SI procedures. Steps could not be performed as written, hardware labelling did not match that in the procedure, and required temporary procedure changes (TPCs) were not being used consistently. The licensee stated that all the SI procedures were walked down prior to initial use. However, it appeared that the walkdowns were not thorough.

In response to NRC concerns that ST procedures could not be performed as written, the licensee initiated a program to walk down and perform selected ST procedures in the field. Of eighteen ST procedures walked down, four ST procedures could not be completed as written without a TPC, one ST procedure did not satisfy Technical Specifications, and most of the ST procedures needed human factors improvements. In addition, the NRC questioned whether there are more Technical Specifications that are not being implemented by an ST procedure. At that time, the licensee already had an independent contractor performing a review of this area. The contractor report identified numerous minor problems. Due to the scope of the problem, the licensee's Independent Safety Engineering Group (ISEG) performed a root cause analysis. Based on recommendations by the independent contractor and ISEG, the licensee initiated a long term program to upgrade ST procedures over the next two years. Although the licensee had initiated actions to determine the scope and root cause of the ST procedure problems, actions to assess the technical adequacy of ST procedures were not initiated until questioned by the NRC. At the end of this period, improvement was noted in ST procedure accuracy and useability.

Numerous LERs (20 of 30) can be attributed to the maintenance/surveillance area. These were due to inadequate or missing ST procedures that led to missed surveillance requirements, long standing maintenance problems resulting in equipment inoperability, and personnel errors during ST procedure and maintenance performance. This trend was improved during the latter part of the assessment period.

Major surveillance testing evolutions performed during the period were done well. The reactor pressure vessel hydrostatic test was effectively planned, documentation of activities were

good and overall coordination was smooth. The containment integrated leak rate test (CILRT) was done well, and management involvement and oversight was evident. QA audit of the CILRT was good, documentation was thorough, and effective communication was evident. After problems with the first performance of the integrated emergency cooling tower test, the second performance was thoroughly prepared, conducted well, and technical support was effective.

The licensee has taken positive measures to ensure proper control of the Inservice Inspection and Inservice Testing (ISI/IST) program. The corporate Nuclear Engineering Department is now responsible for the ISI/IST program, and has issued a "Corporate ISI/IST Administrative Manual". To correct vague, incorrect, or inconsistent interpretations of ASME Code Section XI requirements, the licensee revised numerous surveillance tests and requested relief from the NRC. In addition, an administrative procedure and other ST procedures were revised to address clarity of acceptance criteria and follow-up actions necessary to resolve previously unacceptable component data. The licensee's capability to recall IST schedule adherence on a component basis is a strength. A computer generated tracking system was developed to track all inservice testing and surveillance testing on a component basis. Finally, QA/QC involvement in the IST program has been strengthened. IST has been separated from the annual ISI audit. This separation of audit functions allows the auditors to focus on technical matters and increase the licensee's QA effectiveness in the area of IST.

Housekeeping was generally effective and improvement was noted since the last period. A management by walking around (MBWA) program was initiated during the period. A direct effect of this MBWA was an improved material condition of the plant. The licensee devoted many man-hours to reduce contaminated areas and to paint. Both plants are now less than 10% contaminated, and the entire turbine area floor for both units was completely stripped and repainted. Pipe replacement work was stopped by management after two separate fires occurred in the Unit 3 drywell due to poor housekeeping. A tour by management indicated that cleanliness levels were not adequate. After completion of cleanup efforts, subsequent NRC inspection indicated a marked improvement in housekeeping. The licensee also responded well to NRC comments concerning specific housekeeping issues.

In summary, the reorganization of the Maintenance/I&C Section has strengthened performance in this area by reducing several layers of management and by reducing and controlling the maintenance backlog. Interface with other groups was satisfactory and intrasectional interface was commendable. Major maintenance work accomplished was good, and the scope of MOVATS testing exceeded the industry standard. Problems were noted early in the period regarding the surveillance test program. By the end of the period, improvement in the ST program was noted. Major surveillance testing evolutions performed during the period were done well. Major improvements were noted in the ISI/IST programs, and housekeeping showed improvement since the last SALP.

2. Performance Rating - Category 2

3. Board Recommendation - None

D. Emergency Preparedness (246 hours; 3%)

1. Analysis

During the previous assessment period the licensee was rated Category 2 in this area principally because of weaknesses identified in management control over resolving program deficiencies and inadequate conduct of emergency preparedness program audits. This resulted in issuance of a Notice of Violation for failure to conduct independent reviews in accordance with 10 CFR 50.54(t).

During this assessment period, a full-participation exercise was conducted in September 1988, a partial participation exercise was conducted in June 1989, and a routine safety inspection was performed in April 1989. In addition, changes to the Emergency Plan and implementing procedures were reviewed.

In response to the Notice of Violation, prompt corrective action was taken. The licensee developed a Master Audit Plan which is used in conjunction with the licensee's Quality Assurance Plan and ensures management involvement at different organizational levels. Audits were effective in scope and a thorough understanding of emergency preparedness program areas was exhibited by audit team members. Corrective actions on findings and recommendations identified during audits and self-assessments were generally prompt. Some minor repeat programmatic deficiencies were identified in licensee audits, an indication that corrective actions were not effective in all cases.

Prior to the assessment period the position of Corporate Director, Emergency Preparedness was filled by an individual who lacked background in essential emergency preparedness fundamentals. Corporate management attention to site activities was found to be low, but was compensated for by strong site management attention.

Plant management is routinely involved in programmatic site activities and provided effective leadership to the site EP staff. During this period, staffing to implement site activities has been effectively provided by a contracted Site Emergency Preparedness Coordinator. Most program direction, particularly with regard to resolving those technical issues unique to emergency preparedness, came from contractor support. In order to address both routine and complex emergency preparedness program activities, the licensee recruited for a permanent individual possessing both management background and more in depth experience in this area, however the position had not been filled at the end of this assessment.

Emergency Preparedness implementing procedures have been revised and reformatted for ease of use. Procedures are clearly written and provide good detail for the emergency response organization. In addition, Nuclear Group administrative procedures were developed by corporate staff to provide delineation of responsibility for continue program maintenance. Corporate management places a strong emphasis on maintaining good relations with off-site agencies.

The initial emergency response organization (ERO) demonstrated effective oversight of control room activities in response to off normal plant operations. One Unusual Event occurred which was properly identified and classified. Notifications to offsite organizations were prompt. A thorough analysis of events was conducted and appropriate corrective actions taken.

The emergency response organization is well-staffed with at least three individuals qualified at each level within the organization. This includes six available Emergency Response Managers who are individuals responsible for overall direction and control of emergencies. Additional ERO staffing is augmented by corporate personnel.

In both annual exercises, the licensee's execution and participation demonstrated the capability to provide efficient emergency response actions and effectively implement the Emergency Plan. NRC found that personnel demonstrated thorough knowledge of the newly revised implementing procedures under

emergency conditions. Good command and control of each emergency response facility was exhibited. Classification of events and protective action recommendations to offsite authorities were timely. No significant NRC deficiencies were identified during either exercise and previously identified items were not repeated, an indication of an effective ERO training and response program. Post-exercise critiques effectively focused on identification of deficient technical issues in need of corrective action.

In summary, the licensee maintains an EP program capable of providing effective protective measures in the event of an emergency as evidenced by good exercise performance. Strong site management involvement is evident to support programmatic activities, but reliance on contractor support at the site was necessary for overall program direction and stability due to weak corporate support. The licensee has shown good ability to identify problems. A good working relationship has been maintained with offsite agencies.

2. Conclusion - Category 1

3. Board Recommendations - None

E. Security and Safeguards (338 hours, 4%)

1. Analysis

During the previous assessment period, the licensee's performance was rated Category 3. That rating was based on a substantial deterioration of the security program resulting from a number of program weaknesses, including: lack of oversight by licensee proprietary security staff of the security contractor and, by corporate management, of the overall program; indifference to the performance and maintenance of security systems and equipment; lack of program direction; and poor communications and interface among all concerned. Toward the end of the last assessment period the licensee began to recognize those weaknesses and initiated actions to correct them. However, inspections late in that period identified multiple examples of protected and vital area violations which resulted in escalated enforcement action against the licensee in November 1988, and a Civil Penalty was imposed.

During this assessment period, one routine unannounced security inspection, one special security inspection and one special team inspection were conducted by region-based inspectors. Routine inspections by the resident inspectors continued throughout the period.

The licensee aggressively pursued a planned and comprehensive course of action to improve the overall performance of the security program, with particular emphasis on the security organization. The licensee implemented several significant actions, including: a commitment by senior management to support and implement an effective security program; establishment of a strengthened, better-trained and more effective on site proprietary security organization to direct and oversee program implementation; awarding the security contract to a new contractor with experienced and effective people-oriented management; adding performance clauses to the security force contract; upgrading and strengthening security force training; upgrading systems and equipment to eliminate the previous heavy reliance on compensatory measures that were manpower intensive; revising the existing procedures and instituting new procedures to reflect program changes; to clarify their purpose and content and implementing self-assessment audits to monitor security program status. The extent of the actions taken clearly reflected the licensee's intention to implement a highly effective and quality security program. The program currently being implemented bears little resemblance to the inadequate program previously in place.

The on-site proprietary security organization is now directed by a Nuclear Security Specialist (NSS) who reports directly to the Support Manager, under the Vice-President, Peach Bottom. Reporting to the NSS are a Technical Assistant, a Chief Security Coordinator, and six Shift Security Assistants (SSA), who are responsible for overseeing the performance of the contract security force around-the-clock. While the current proprietary organization does not represent an appreciable increase in the number of personnel over that which existed in the prior assessment period, a much stronger and more effective organization was evident during this assessment period. The NRC believes this is the result of senior management's commitment to the program and the appointment of a new and very capable individual to direct the program.

The licensee, on its own initiative, also implemented periodic structured interface meetings between security and other plant groups to resolve any real or preceived problems and to exchange information of mutual interest. These meetings have been very effective in establishing good rapport and are further evidence that the security program is receiving increased management support.

Early in the assessment period the licensee changed security force contractors and developed a performance-based contract for the contractor. The transition between contractors was very well-planned and took place with minimal disruptions to day-to-day operations. Since that time overtime has been reduced, all security force members are on regular shifts, work schedules are equitable, morale is high, security force members are better trained and more knowledgeable of their duties and responsibilities, and they exhibit a very professional demeanor. Contractor management and supervisors are experienced, knowledgeable and highly-effective. All appear to possess excellent interpersonal skills.

During this assessment period, the licensee also took actions to improve the maintenance of the security system and equipment, and developed short and long-range plans to replace unreliable and aging equipment. The improved maintenance of equipment has greatly reduced the need for man-power intensive compensatory measures for inoperative equipment and, thereby, minimized work schedule disruptions for security force members. It is also indicative of improved communications between the security and maintenance groups and is further evidence of improved management support for the program.

During the assessment period the licensee submitted six event reports in accordance with the provisions of 10 CFR 73.71. Two events early in the assessment period involved guards who were inattentive while on duty and occurred prior to changing the security contractor. There have been no events involving personnel performance under the present security contractor. Two events, also early in the assessment period, involved off-site use of drugs by utility contract workers. Another event, also early in the assessment period, involved a degraded Vital Area barrier, and an event, late in the period, involved a bomb threat. All events were promptly responded to and properly reported.

During the assessment period, the licensee submitted three revisions to security program plans under the provisions of 10 CFR 50.54(p). In general, these revisions were of high quality, technically sound and reflected well-developed policies and procedures as well as appropriate management oversight. The licensee continues to improve the quality of the program plans and actively seeks NRC guidance to ensure that accurate and acceptable revisions are submitted.

In summary, the licensee has demonstrated a commitment to implement an effective security program that goes beyond minimum compliance with NRC requirements. As a result of this commitment the licensee's security organization has been strengthened, the contract security organization has been upgraded, maintenance has been improved for existing equipment, and installation of upgraded equipment has been scheduled. The significant turnaround in performance in the security and safeguards area was confirmed by an NRC special team inspection in January 1989. Continued senior management support and involvement in the security program is necessary to ensure that the momentum demonstrated during this assessment is maintained.

2. Performance Rating - Category 2, Improving

3. Board Recommendations - None

F. Engineering/Technical Support (1096 hours, 13%)

1. Analysis

This area was rated Category 1 in the previous SALP report, mainly due to strong support for the Unit 3 pipe replacement outage. The system engineer concept and its implementation, and support of refuel floor activities were other attributes noted in this area. A notable weakness in the control of site electrical load growth was identified as a continuing problem requiring management attention.

Included in the basis for the current SALP evaluation are region-based and resident inspections conducted during the period, including the special electrical inspection. The quality of responses to NRC concerns was mixed. The licensee's effort to address the requirements of Bulletin 85-03, "Motor Operated Valve, Common Mode Failures During Plant Transients Due to Improper Switch Settings," was very extensive. Management allocated resources to broaden this effort into all safety related and critical balance of plant valves. The engineering support in the development of VOTES (valve operator testing and evaluation system) was a good initiative and demonstrated good cooperation between engineering and maintenance. The licensee is retaining computerized data for trending MOV performance. This is an indicator of aggressive performance monitoring.

However, the licensee demonstrated a narrow response to NRC Information Notice 88-72, "Inadequacies in the Design of DC Motor Operated Valves," regarding reduced or degraded voltage available at DC motors. Timely attention was not given to

evaluation of undervoltage concerns in the DC system. The licensee limited the scope of review to address only motor operated valves. Although IN 88-72 was primarily directed toward DC motor operated valves, it also indicated concerns with battery supplied power, cable losses and transients.

Support in the area of electrical engineering was generally weak as evidenced by poor follow-up to concerns identified by the NRC. Engineering calculations for battery capacity, diesel generator loads etc., were out of date. Inspection during this SALP period found the licensee has been aware of this problem for a significant length of time but has failed to take appropriate actions to resolve the concern. During an NRC inspection in 1986, the need for a program to track electrical load growth within the plant was discussed and the licensee committed to have a program in place by the first quarter of 1988. The licensee took a narrow approach to this NRC concern and developed only an informal listing of loads rather than developing and implementing a comprehensive program. In addition, licensee personnel were not familiar with these calculations, or the assumptions on power factor, efficiency, etc. These problems appear to be caused by excessive reliance on architect engineer services.

The licensee completed numerous modifications during the period. In general, the licensee's safety evaluations for these modifications were satisfactory and items were installed in accordance with the modification plan. However, some deficiencies in modifications were noted. In the modification of masonry wall to meet the requirements of NRC Bulletin 80-11, "Masonry Wall Design," the engineering analysis and modification design were acceptable; however, inspection and verification requirements to assure the quality of work were not clearly delineated. Consequently, deficiencies occurred in the setting and torquing of concrete expansion anchor bolts. Also, there was no formal requirement to incorporate the new wall designations into the controlled drawings; and there was no continuing program to monitor the masonry wall program to assure that the as-built condition has been analyzed and is reflected on the controlled drawings. A second example involved NRC identified deficiencies with tubing supports installed for the seismic safety grade air supply modification. The engineering design did not detail the proper method to install the tubing. Another modification deficiency concerned miswiring of a HPCI analog isolator flow controller. Several contributors were inadequate installation, QC checks and modification acceptance testing. The licensee's corrective actions included enhancements to the modification process to ensure effective post modification testing. While the overall engineering support to modifications was adequate, some areas as noted above were weak.

In response to modification program deficiencies, in November 1988, Peach Bottom began utilizing a modification team (MOD Team) approach. Each MOD Team is led by a site engineer and has representation from applicable site organizations and from the corporate Nuclear Engineering Department (NED). This approach has the potential to enhance coordination between the site and corporate engineering.

The System Engineer position plays a key role in plant operations, periodic testing, maintenance and modification activities. This includes site engineering support of plant activities. Generally, System Engineers are enthusiastic and are knowledgeable of their system. The technical quality of their work is good and they have a positive impact on the condition and capability of their system. However, the System Engineers are somewhat inexperienced and supervisory oversight is spread thinly. In response to this concern, the licensee is expending significant resources for training, which will include system design and operation, simulator review, and engineering skills.

Modification Acceptance Tests (MATs) are done to prove system operability after a modification is complete. During MATs, test controls regarding lifted leads and fuses, and jumper installation were good. The use of independent and double verification was also well done. However, there was a lack of clearly defined acceptance criteria in MATs, and the design basis of the modification was not always completely tested. Several examples included installation of a standby gas treatment system flow switch, alternate rod insertion, and installation of a HPCI isolation flow controller. In response, the licensee revised an administrative procedure and reviewed several Unit 2 MATs again.

The licensee's establishment of a corporate Nuclear Engineering Department (NED) individual on site to work as a liaison between NED and Peach Bottom has proven to be effective. Engineering resolution of various problems is more timely than in the past and corporate engineering is more aware of specific details and day-to-day problems since the liaison is able to attend various routine and special on site meetings. The offgas recombiner malfunction and the loss of the liquid radwaste discharge sparger were quickly responded to by NED.

Management demonstrated increased attention to some aspects of training by: (1) having the Site Training Superintendent report directly to the Vice President, Peach Bottom; (2) establishing a foreman position in Operations with the major responsibility of assuring that nonlicensed operators on his shift are properly

trained; and, (3) authorizing the design and construction of a new training center with an estimated completion date of March 1990. However, deficiencies were noted with operator training and HP technician training. Initial NRC observations of licensed operators on the Peach Bottom simulator noted weaknesses in operator performance. Subsequent simulator observations by the NRC noted improvements, but one crew and one Shift Supervisor were unsatisfactory. Further training corrected the deficiencies. In addition, licensee readiness self-assessment did not appreciate the significance of the operator training issues. HP training programs have been severely impacted by a lack of dedicated classroom space, training laboratories, experience, challenging performance goals, and poor training staff morale. A reorganization last SALP period resulted in program improvements, but the bulk of the weaknesses remain unresolved.

Weaknesses were apparent in the area of Environmental Qualification (EQ). This area was previously considered a strength. Licensee management at the Corporate office was inadequately involved in the EQ area such that most of the findings during the June 1987 EQ inspection were not resolved by the early part of this SALP period. The licensee's EQ engineering group appeared to be understaffed. During this assessment period, the licensee initiated the process of hiring additional experienced EQ engineers. During an inspection of the EQ area, the licensee's EQ group had to obtain qualification data and perform evaluations to resolve previously identified EQ issues.

A strength noted is the licensee's questioning attitude that has developed during the current assessment period. For example, the licensee pursued several long-standing engineering problems. Several examples include flooding of the emergency core cooling pump rooms, operability of the emergency cooling tower (ECT), high temperatures in the control room and post accident torus water level. Licensee corrective actions were good for most of these issues except for the operability of the ECT. The first performance of the ECT test was not a true integrated test. Initially, planning was not well conducted and licensee resources were not sufficient to support the test. The second performance of the ECT integrated test was well done.

In summary, as in previous major engineering efforts, the licensee demonstrated strong control in the implementation of the motor operated valve program and the pursuit of long-standing problems such as the flooding in the emergency core cooling pump rooms, operability of the emergency cooling tower and other noted projects. This strong control was

contrasted by the weak performance in the engineering involvement in EQ, electrical plant load growth, definition of task inspection requirements and response to NRC Information Notice 88-72.

2. Performance Rating - Category 2

3. Board Recommendation

Licensee: Assess the engineering program to ensure consistent oversight and controls in the quality of engineering projects.

NRC: Perform a Safety System Functional Inspection in the 1st quarter of 1990.

G. Safety Assessment/Quality Verification (1008 hours; 13%)

1. Analysis

This discussion is a synopsis of quality and safety evaluation philosophies reflected in other functional areas. In assessing this area, the SALP Board has considered attributes that are key contributors in ensuring safety and verifying quality. Implementation of management goals, planning of routine activities, worker enthusiasm, management involvement and training are examples.

During the previous assessment period, licensee performance in the area was rated Category 2. Strengths identified were related to the licensee's organizational restructuring and new management personnel in response to the issues identified by the NRC in the March 1987 shutdown order. Improvements in shift management, plant management, the Nuclear Review Board (NRB), response to technical problems, corporate and station management involvement, fitness for duty concerns and quality assurance and quality control activities were noted. Some weaknesses were noted in oversight and QA involvement in emergency preparedness, oversight of the security force and program, and in the degree of completeness of the licensee's self assessment capability.

Corporate and station management have been highly involved in station activities. Extensive exercise of management-by-walking-around principles has been undertaken by all levels of management, including the CEO and the members and consultants to the NRB. An extensive network of meetings that includes the NRB, the monthly station review meeting, the Vice President - PBAPS staff meeting, the Plant Manager meeting, the station

staff daily planning meeting and the Shift Manager meeting serve as a vehicle for providing information, coordinating and managing station activities. A positive attitude has been fostered by corporate management in site personnel as seen in personal interaction skills, open-mindedness towards sharing information and in event critiques.

The management of the restart power testing program was approached in a comprehensive, methodical manner which reflected a high degree of management involvement. The program included special additional procedures for restart, augmentation of operations, the plant safety review group for restart and a special Management Oversight Team (MOT) to perform self assessments at various testing plateaus. The MOT includes considerations from all of the major corporate and plant organizational elements including Quality Assurance and also considers input from an industry observer.

Plant Management is involved in day to day station activities and provides effective leadership. During the initial portion of the Unit 2 restart power testing program, the Plant Manager conducted holdpoint meetings prior to proceeding to the next higher plateau. These meetings allowed plant management to review past equipment malfunctions, and to assess the readiness of people and power plant equipment. The Plant Manager provides excellent leadership for his Superintendents, and for the other first and second line supervisors. During the period prior to restart, a number of personnel errors resulted in reportable events. The licensee was timely in recognizing the problem, and the Plant Manager personally reviewed all of these related events.

Shift Manager leadership continues to be a licensee strength. The Shift Managers have demonstrated effective oversight of control room activities during simulator and emergency plan exercises, during actual off normal plant events, during special evolutions and tests, and during the Unit 2 restart power testing program. Shift Managers are an important part of the overall management team. This is evidenced by their presence at Nuclear Review Board, Commission, Advisory Committee on Reactor Safeguards (ACRS), Management Oversight Team and NRC/public restart meetings. In addition, operations and plant management provide effective oversight of plant operational activities. This was demonstrated by their involvement in control room normal, off-normal and startup activities. Management has provided effective guidance and expectations for control room activities in the Operations Manual.

Both strengths and weaknesses were evident in the licensee's self-assessment capabilities. Operations conducts effective operational event follow-up review including formal critiques and reports. Root cause is accurately identified and effective corrective actions are implemented. A strength of the licensee's initial readiness assessment for restart was that it required line managers to assess their own programs. This was highly effective; however, a weakness of this process was the focus on concerns previously identified rather than on independent assessment of potential problem areas. As a result, two areas were missed by the initial restart assessment panel: the severity of weakness in operator skills as noted on the simulator; and inadequacies in the surveillance test program. Other areas where self assessment was not fully effective included health physics technician training and facilities, and the modification program. Modification program weaknesses were identified by both the licensee and the NRC and included inadequate installation procedures, poor inspection criteria and weak modification acceptance test criteria. As noted in the corresponding section of this report the licensee has since developed and implemented corrective actions to address these areas.

The Plant Operations Review Committee (PORC) and the NRB provide effective oversight of Peach Bottom operational and related activities. The NRB displays a thorough questioning attitude which is substantially assisted by its consultants. Prior to Unit 2 startup a high number of personnel errors occurred. NRB was quick to recognize this, expressed concern and requested a thorough review and formal report at their next meeting. In addition, the NRB was the driving force for performance of an integrated test of the Emergency Cooling Tower. A Nuclear Committee of the licensee's Board of the Directors (NCB) has also been established for oversight purposes. The establishment of the NCB exceeds regulatory requirements and serves as a useful adjunct to the Board of Directors.

The licensee has demonstrated a much more proactive approach to compliance with established procedures during the rating period. Examples include the development of new procedures where needed. Specific examples are the need for procedural guidance to control the temperatures in the control room when operating in the high radiation mode, the strict compliance with procedural requirements that was demonstrated upon discovery that the SRM/IRM position indicators had not been calibrated as required by Technical Specifications, and revision of the special event procedure for toxic gas to include previously missing guidance on responding to potential toxic gas indicators.

The licensee's evaluation of industry experience information and NRC guidance on such information has been effective in identifying several weaknesses in design, procedures and practices. Examples include the recognized need to develop procedural guidance for controlling control room temperature when in the high radiation mode of operation, and inadequacies in direct current motor operated valves. However, EQ and electrical load growth problems showed weak licensee response.

The licensee has continued to respond to the need to improve the station culture during the rating period. In general, policies, programs and processes have been developed, implemented and communicated by management to all levels of the organization. There is evidence of both station and corporate management involvement and support in all activities related to cultural change. Corporate management communicates its goals and sets the tone for performance and quality expectations. With only a few exceptions, which were subsequently remedied, policies have been consistently communicated and understood. Extensive support has also been provided for specialized organizational development activities and associated programs directed toward cultural change through all levels of the organization.

Significant improvement in the site security program, reflecting strong involvement by site management and support by corporate management was noted during the period. This was particularly evidenced by the highly responsive commitments provided by site management which formed the basis for resolution of all outstanding issues.

Routine licensing activities during the current SALP period continued at a relatively modest pace with 22 licensing actions being processed for each unit. A weakness was noted in the 13 license amendments applications processed in that three of them dealing with degraded voltage protection, SRM/IRM minimum count rate, and the Unit 2 reload required modifications to support the safety basis for the application or to correct errors. There were several other instances where insufficient assurance of quality had been established for amendment applications in that proposed changes to Technical Specifications were not consistent with the text. This latter concern, however, is less significant than the previous concerns.

A strength was noted in licensing actions in that three of them reflected a vigorous response by licensee management and plant staff to issues of significant safety concern. For example, the licensee's response to the discovery of the potential hazards posed by the control room Cardox fire suppression system on

control room habitability was characterized by an active plant management involvement and a clear statement of the safety basis for the resolution of the issue. The licensee's response in upgrading the diesel generator Cardox fire suppression system reflected a strong emphasis on ensuring compliance with the safety and design basis for the system. The licensee's requested amendment of the SRM/IRM detector position calibration reflected the greatly enhanced concern on the part of the licensee for strict compliance with Technical Specifications and procedures.

In summary, both corporate and site management have been actively involved in assuring safety. Management has vigorously provided leadership in establishing the new standards of performance and has been sensitive to the needs of employees. A recognition of the primary importance of safety has been consistently displayed. Shift manager leadership has been a major contributor to the licensee's efforts to correct long standing cultural problems. The operations staff has experienced great improvements, has incorporated many new personnel and is progressing up a learning curve which to date includes a relatively trouble free startup of Unit 2. The licensee has demonstrated an improved self-assessment capability which thoroughly reviews, establishes root cause, and performs corrective actions for problems. However, the capability to identify emerging problems needs to be improved. Management oversight committees have been effective and the NRB has been aggressive in pursuing effective resolution of long standing problems. Significant improvements have been made in emergency planning and dramatic improvements have been achieved in the security area. Higher standards are being applied and a much better definition of problem areas is being achieved in areas such as modifications, maintenance/instrument and controls and radiological controls. Quality assurance activities have been integrated and enhanced.

2. Performance Rating - Category 2

3. Board Recommendation - None

SUPPORTING DATA AND SUMMARIES

A. Investigations and Allegations

Twelve allegations were received during the assessment period in the following areas:

- o radiological controls - 4
- o security - 3
- o operations - 2
- o safety assessment - 2
- o maintenance - 1

The allegations in the area of radiological controls were examined by the resident inspectors and were unsubstantiated. Of the three security allegations, two were unsubstantiated and the third was referred to the FBI. One operations allegation was substantiated. However, the safety significance was minor and management was already in the process of correcting the problem. The other operations allegation was unsubstantiated. One safety assessment allegation was unsubstantiated and the other is related to a discrimination complaint and currently remains open. The maintenance allegation was unsubstantiated.

B. Escalated Enforcement Actions

A severity level II violation and $1,250,000.00 civil penalty was issued on August 10, 1988 because of control room operator inattentiveness and management's failure to detect and correct the problem. Escalated enforcement against licensed operators occurred on August 9, 1988. Although these enforcement actions were issued during this assessment period, the violations were outside this assessment period and their effect on performance was addressed in previous SALP reports.

A severity level III violation and $50,000.00 civil penalty was issued on November 15, 1988, because of security program breakdowns associated with vital and protected area controls. Although this civil penalty was issued during this assessment period, the violation occurred in the previous SALP.

C. Management/Enforcement Conferences

- -- NRC Restart Panel meeting on site with the licensee on August 5, 1988.
- -- Management meeting in Region 1 to discuss the licensee self assessment program and start up plans on September 29, 1988.
- -- NRC Commission meeting to review Peach Bottom status on October 5, 1988.
- -- SALP Management Meeting on site on November 1, 1988.
- -- Management meeting in Region 1 to discuss radiation protection program and exposure results from Unit 3 pipe outage on November 8, 1988.
- -- Management meeting in Region 1 to discuss the licensee's configuration control management status and program plans on November 18, 1988.

-- Management meeting in Region 1 to discuss Pennsylvania's restart concerns and contentions on January 3, 1989.
-- NRC Restart Panel Meeting with licensee in Region 1 to discuss technical hardware issues on January 25, 1989.
-- Public meetings in Harford County, Maryland and Lancaster County, Pennsylvania on February 28, 1989, and in York County, Pennsylvania on March 1, 1989.
-- ACRS meetings in Bethesda, MD to discuss Peach Bottom restart on March 8 and 9, 1989.
-- NRC Commission meeting in Rockville, MD to consider Peach Bottom restart on April 14, 1989.

D. Licensee Event Reports (LER)

1. Report Quality

The LERs adequately described the major aspects of each event, including component or system failures that contributed to the event and the significant corrective actions taken or planned to prevent recurrence. The reports were thorough, detailed, fairly well written and easy to understand. The narrative sections typically included specific details of the event such as valve identification numbers, model numbers, number of operable redundant systems, the date of completion of repairs, etc., to provide a good understanding of the event.

Many LERs presented the event information in an organized pattern with separate headings and specific information in each section that led to a clear understanding of the event information. Previous similar occurrences were adequate.

2. Causal Analysis

		Number	%
A.	Personnel error	10	33
B.	Design/Manuf/Constr/Install	8	27
C.	External Cause	0	0
D.	Procedure Inadequacy	8	27
E.	Component Failure	3	10
X.	Other	1	3
(See Table 3)		30	100

The following common cause events were identified:

-- Eight events resulted from missed surveillances due to inadequate procedures.
-- Seven events resulted from personnel errors during maintenance or surveillance activities.

TABLE 1

INSPECTION HOURS SUMMARY*

Peach Bottom Atomic Power Station

August 1, 1988 - June 30, 1989

Functional Area	Hours	Annualized Hours	% of Time
A. Plant Operations	3953	4312	48
B. Radiological Controls	452	493	6
C. Maintenance/Surveillance	1061	1158	13
D. Engineering/Technical Support	1096	1196	13
E. Emergency Preparedness	246	268	3
F. Security and Safeguards	338	368	4
G. Safety Assessment/Quality Verification	1008	1100	13
TOTALS	8154	8895	100

* Inspection hours include NRC Inspection Reports 88-24/24 plus 88-28/28 through 89-17/17.

TABLE 2

ENFORCEMENT SUMMARY*

Peach Bottom Atomic Power Station

August 1, 1988 - June 30, 1989

Functional Area	Number By Severity Level IV	V	Subtotal
A. Plant Operations	1	0	1
B. Radiological Controls	1	1	2
C. Maintenance/Surveillance	2	0	2
D. Engineering/Technical Support	3	1	4
E. Emergency Preparedness	0	0	0
F. Security	1	0	1
G. Safety Assessment/Quality Verification	0	0	0
TOTALS	8	2	10

*Escalated enforcement associated with the control room operator inattentiveness, management failure to detect and correct the operator problems, and the security program problems are not included in this Table. These enforcement actions were based on violations that occurred prior to this assessment period. (see section B of the Supporting Data and Summaries).

TABLE 3
Licensee Event Reports*
Peach Bottom Atomic Power Station
August 1, 1988 - June 30, 1989

Functional Area	Number by Cause A	B	C	D	E	X	Subtotal
A. Plant Operations	1	1	0	0	1	0	3
B. Radiological Controls	1	0	0	0	0	0	1
C. Maintenance/Surveillance	7	2	0	8	2	1	20
D. Engineering/Technical Support	1	5	0	0	0	0	6
E. Emergency Preparedness	0	0	0	0	0	0	0
F. Security **	0	0	0	0	0	0	0
G. Safety Assessment/Quality Verification	0	0	0	0	0	0	0
TOTALS	10	8	0	8	3	1	30

Cause Codes:
A. Personnel error
B. Design, manufacturing or installation
C. Unknown or external cause
D. Procedure inadequacy
E. Component failure
X. Other

* LERs 2-88-18, 2-88-21 thru 33, 3-88-08 thru 3-88-11, 2-89-01 thru 2-89-12.
** Security Event Reports are discussed separately in Section IV.E

ATTACHMENT 1

SALP CRITERIA

Licensee performance is assessed in selected functional areas, depending on whether the facility is in a construction or operational phase. Functional areas normally represent areas significant to nuclear safety and the environment. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations in that area. Special areas may be added to highlight significant observations.

The following evaluation criteria were used, as applicable, to assess each functional area:

- o assurance of quality, including management involvement and control
- o approach to the resolution of technical issues from a safety standpoint
- o responsiveness to NRC initiatives
- o enforcement history
- o operational and construction events, including response to, analyses of, reporting of, and corrective actions for
- o staffing, including management
- o effectiveness of training and qualification program

However, the SALP Board is not limited to these criteria and others may have been used where appropriate. On the basis of the SALP Board assessment, each functional area evaluated is rated according to three performance categories. The definitions of these performance categories are given below.

Category 1. Licensee management attention and involvement are readily evident and place emphasis on superior performance of nuclear safety or safeguards activities, with the resulting performance substantially exceeding regulatory requirements. Licensee resources are ample and effectively used so that a high level of plant and personnel performance is being achieved. Reduced NRC attention may be appropriate.

Category 2. Licensee management attention to and involvement in the performance of nuclear saety or safeguards activities is good. The licensee has attained a level of performance above that needed to meet regulatory requirements. Licensee resources are adequate and reasonably allocated so that good plant and personnel performance is being achieved. NRC attention may be maintained at normal levels.

Category 3. Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are not sufficient. The licensee's performance does not significantly exceed that needed to meet minimal regulatory requirements. Licensee resources appear to be strained or not effectively used. NRC attention should be increased above normal levels.

The SALP Board may assess a functional area and compare the licensee's performance during a portion of the assessment period to that during an entire period in order to determine a performance trend. Generally, performance in the latter part of a SALP period is compared to the performance of the entire period. Trends in performance from period to the next may also be noted. The trend categories used by the SALP Board are as follows:

Improving: Licensee performance was determined to be improving near the close of the assessment period.

Declining: Licensee performance was determined to be declining near the close of the assessment period and the licensee had not satisfactorily addressed this pattern.

A trend is assigned only when, in the opinion of the SALP Board, the trend is significant enough to be considered indicative of a likely change in the performance category in the near future. For example, a classification of "Category 2, Improving" indicates the clear potential for "Category 1" performance in the next SALP period.

It should be noted that Category 3 performance, the lowest category, encompasses acceptable, although minimally adequate, safety performance. If at any time the NRC concluded that a licensee was not achieving an adequate level of safety performance, it would then be incumbent upon NRC to take prompt appropriate action in the interest of public health and safety. Such matters would be dealt with independently from, and on a more urgent schedule than, the SALP process.

ATTACHMENT 2

Summary of Facility Operations

Unit 2

At the beginning of the assessment period, Unit 2 was in a cold condition per the March 31, 1987, NRC Order with coolant temperatures less than 212 degrees Fahrenheit. The Unit 2 core was loaded into the reactor vessel and the unit was in day 514 of its seventh refueling outage that began March 13, 1987. Unit 2 maintenance repair work was underway on plant systems.

Unit 2 maintenance repair work was performed on plant systems and equipment that was required for major milestones. The Unit 2 reactor pressure vessel operational hydrostatic test was successfully completed during the period November 22 to 23, 1988. The Unit 2 containment integrated leak rate test was successfully completed on January 3, 1989.

Unit 2 restarted on April 26, 1989, after receiving approval from the Region 1 Administrator to operate at power levels not exceeding 35% power. The partial release from the Order that shut down the facility came after the licensee announced they had completed all work and all systems were ready to support restart operations. Initial criticality was achieved on April 27, 1989. During a subsequent startup that same day, problems were noted with three of the intermediate range monitors (IRMs) of the nuclear instrumentation system. The licensee shut down to repair these IRMs. The plant then restarted on April 30, 1989, to recommence training criticalities.

The licensee completed training startups on May 1, 1989. The licensee then conducted reactor heatup and pressurization to test the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems. A RCIC condensate pump motor controller malfunction was corrected, and the RCIC system was tested satisfactorily on May 4, 1989. A HPCI wiring error and an electrical grounding problem were corrected, and HPCI testing from the control room was completed satisfactorily on May 5, 1989. HPCI was subsequently tested satisfactorily from the alternate shutdown panel on May 8, 1989.

Safety relief valve (SRV) testing was performed on May 9, 1989; however, one SRV failed to reclose initially and three SRVs had position indication problems. A drywell inspection at 450 psig reactor pressure occurred on May 10, 1989. One valve had a packing leak which was repaired. The licensee concluded that one SRV required replacement during subsequent testing on May 11, 1989. The licensee shut down Unit 2 on May 11, 1989. The SRV was replaced and the unit restarted on May 13, 1989. SRV retesting was completed satisfactorily on May 14, 1989.

During reactor heatup to rated conditions on May 14, 1989, problems were noted with the elctro-hydraulic control (EHC) system. The reactor was taken subcritical and the EHC system was repaired. The reactor was restarted and the reactor achieved rated pressure conditions (920 psig) on May 15, 1989.

On May 19, 1989, at 7:22 a.m., the Unit 2 reactor automatically scrammed from 20% power. The cause of the scram was a failed "three element/single element" control switch in the feedwater level control system. This malfunction resulted in a low reactor water level trip. Safety systems reacted automatically to this condition. Upon completion of the licensee's root cause analysis and corrective actions, Unit 2 restarted on May 21, 1989.

On May 22, 1989, the turbine generator was started up and synchronized with the grid at 21% reactor power later that day. A malfunction in the offgas recombiner system caused the licensee to shut down the turbine generator and reduce power to 5%. The licensee traced the problem to a high steam flow input combined with a restricted drain line from the offgas recombiner condenser. The licensee subsequently restarted the turbine generator and synchronized it with the grid on May 24, 1989. Successful turbine generator overspeed trip testing was completed on May 25, 1989.

Power ascension continued to 33% power on June 1, 1989. This power level was the licensee's administrative limit for the NRC's relaxed Order which limits reactor power to 35%. On midnight shift on June 18, 1989, control room operators noted the main generator load oscillating. The voltage regulator was shifted to manual and the oscillations stopped. Troubleshooting determined that a fuse had blown in the voltage regulator circuit. It was replaced and the unit returned to 33% power.

On June 28, 1989, the NRC relaxed the Shutdown Order to allow Unit 2 operation to 70% power. At the end of the assessment period, Unit 2 was operating at 45% power.

Unit 3

At the beginning of assessment period, the Unit 3 core was offloaded into the spent fuel pool. Unit 3 was in day 313 of its seventh refueling outage that began October 1, 1987. The pipe replacement contractor completed work and demobilized in August 1988. The Unit 3 reactor cavity was reflooded on August 26, 1988.

The licensee completed an ultrasonic reinspection of the Unit 3 reactor pressure vessel manway access hole covers on August 16 and 17, 1988. One cover had crack indications which confirmed the results of the inspections conducted during January 1988. Repairs to the reactor pressure vessel manway access covers were completed in June 1989.

During the remainder of the period, the Unit 3 outage continued with limited work due to Unit 2 restart efforts. Control rod drive exchange began on June 25, 1989. At the end of the assessment period, Unit 3 continued maintenance and modification work, and system testing.

Common

At the beginning of the assessment period, the facility was shut down in accordance with the March 31, 1987, NRC Order.

On August 11, 1988, the NRC proposed fining PECo and 33 of 36 present and former NRC-licensed reactor operators for inattention to duties at Peach Bottom. The NRC proposed a fine of $1,250,000 for failing to detect, report and deal with inattentive operators, and supervisors who condoned it. The NRC proposed fines, ranging from $500 to $1000, for 33 present and former operators of PECo involved in sleeping and/or other acts of inattention to duty. Three operators have been cited for violating NRC requirements, but were not fined because they had been licensed for only a brief period before the Shutdown Order. An Order was issued restricting activities of three former site managers from supervision and oversight of licensed activities.

On August 27, 1988, the security contractor was turned over from Burns Security to Protection Technology, Inc. (PTI).

The Institute for Nuclear Power Operations (INPO) conducted a two week evaluation of the Peach Bottom facility during the period September 12 through 23. INPO also conducted a corporate evaluation during the period October 3 through 7, 1988.

On September 8, 1988, the licensee responded to the NRC proposed $1,250,000 fine for failing to detect, report and deal with inattentive operators, and supervisors who condoned it. The licensee agreed to pay the fine and not take action to protest or to request mitigation of the proposed penalty.

A full scale, unannounced emergency plan exercise was held from 5:30 p.m. to midnight on September 27, 1988. The NRC, the states and local officials participated in the exercise.

In a letter dated October 5, 1988, Philadelphia Electric Company reported that the Peach Bottom Restart Plan corrective actions were complete. On October 21, 1988, Philadelphia Electric Company announced that there would be a delay in the readiness for restart of Units 2 and 3 to allow further upgrade in areas such as operator training, managerial and supervisory effectiveness and plant security.

During the week of January 16, 1989, INPO was on site to follow-up on deficiencies identified during their September 1988 evaluation.

On Thursday, January 26, 1989, interested TV, radio and newspaper media were invited inside the facility to observe general plant conditions after PECo's intensive restart efforts.

On February 2, 1989, PECo informed the NRC via a letter that Peach Bottom was ready for the IATI. The licensee basis for this conclusion was completion of their own self and restart readiness assessments, and a readiness assessment by the Institute for Nuclear Power Operations (INPO).

A demonstration was held at the Peach Bottom site on March 31, 1989, to mark the second anniversary of the Peach Bottom Shutdown Order. The rally was held at the boat launch area from 4:30 to 6:30 p.m. Approximately 40 people attended this rally.

On April 14, 1989, an NRC Commission meeting was held to discuss Peach Bottom restart. The NRC staff and the licensee gave presentations at the meeting. The NRC Commissioners approved Peach Bottom Unit 2 restart by a vote of 3-0.

The 1989 Annual Emergency Preparedness Exercise was conducted on June 14, 1989. An NRC team of seven inspectors evaluated the licensee's performance.

ENCLOSURE 2

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

07 SEP 1989

Docket No. 50-277/88-99
50-278/88-99

Philadelphia Electric Company
ATTN: Mr. C. A. McNeill
Executive Vice President-Nuclear
2301 Market Street
Philadelphia, Pennsylvania 19101

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP) Board Report Number 50-277/88-99, 278/88-99

An NRC SALP Board has reviewed and evaluated the performance of activities at Peach Bottom Atomic Power Station for the period of August 1, 1988 through June 30, 1989. The results of this assessment are documented in the enclosed SALP Board Report. We will contact you soon to schedule a meeting to discuss the SALP evaluation.

At the SALP meeting you should be prepared to discuss our assessments and your plans to improve performance. The meeting is intended to be a candid dialogue wherein any comments you may have regarding our report are discussed. Additionally, you may provide written comments within 20 days after the meeting.

Your cooperation with us is appreciated.

Sincerely,

W T Russell

William T. Russell
Regional Administrator

Enclosure: SALP Board Report No. 50-277/88-99; 278/88-99

07 SEP 1989

cc w/encl:
John S. Kemper, Sr., Senior Vice President - Nuclear
E. C. Kistner, Chairman, Nuclear Review Board
Jack Urban, General Manager, Fuels Department, Delmarva Power & Light Co.
Dickinson M. Smith, Vice President, Peach Bottom Atomic Power Station
D. Helwig, Vice President - Nuclear Services
W. H. Hirst, Director, Joint Generation Projects Department, Atlantic Electric
J. F. Franz, Plant Manager, Peach Bottom Atomic Power Station
B. W. Gorman, Manager, External Affairs Company
Troy B. Conner, Jr., Esquire
Eugene J. Bradley, Esquire, Assistant General Counsel
Raymond L. Hovis, Esquire (Without Report)
Thomas Magette, Power Plant Siting, Nuclear Evaluations
G. A. Hunger, Director, Licensing Section
Doris Poulsen, Secretary of Harford County Council
Thomas Andresw, Dept. of Environment
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
K. Abraham, PAO (27) Commonwealth of Pennsylvania
Chairman Carr
Commissioner Roberts
Commissioner Curtiss
Commissioner Roberts

ENCLOSURE 3

PHILADELPHIA ELECTRIC COMPANY

NUCLEAR GROUP HEADQUARTERS

955-65 CHESTERBROOK BLVD.

WAYNE, PA 19087-5691

(215) 640-6650

DAVID R. HELWIG
VICE PRESIDENT
NUCLEAR SERVICES

October 11, 1989

Docket Nos. 50-277
50-278

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

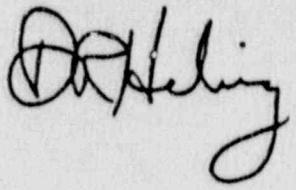
SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Response to SALP Board Report

REFERENCES: Letter dated September 7, 1989 (W. T. Russell, NRC to C. A. McNeill, Jr., PECo) transmitting SALP Board Report for August 1, 1988 to June 30, 1989

Dear Sirs:

Philadelphia Electric Company appreciated the opportunity to comment on the recent SALP Board Report for Peach Bottom Atomic Power Station (referenced above) at the SALP meeting held September 18, 1989 at the station; however, we would like to discuss with you at more length corporate oversight of the health physics and emergency preparedness programs. A meeting has been scheduled with the Division of Radiation Safety and Safeguards at the Regional Office on October 23, 1989 at 11:00 a.m., and we look forward to this meeting.

Very truly yours,



cc: W. T. Russell, Administrator, Region I, USNRC
T. P. Johnson, USNRC Senior Resident Inspector