ENCLOSURE 1

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE (SALP)

PEACH BOTTOM ATOMIC POWER STATION UNITS 2 AND 3

REPORT NO. 50-277/95-99 AND 50-278/95-99

I. BACKGROUND

The SALP Board met on October 26, 1995, to assess the nuclear safety performance of the Peach Bottom Atomic Power Station, Units 2 and 3 for the period May 1, 1994 through October 14, 1995. The Board met pursuant to NRC Management Directive (MD) 8.6, "Systematic Assessment of Licensee Performance (SALP)," (see NRC administrative letter 93-20). As described in the Directive, the Board reviewed the functional areas and assessed performance ratings, as discussed below. Board members were Wayne D. Lanning (Board Chairman), Deputy Director, Division of Reactor Projects, NRC Region I (RI), Allen R. Blough, Acting Deputy Director, Division of Reactor Safety, RI, and John F. Stolz, Director, Project Directorate I-2, NRC Office of Nuclear Reactor Regulation. The Board developed this assessment for the approval of the Region I Administrator.

II. PERFORMANCE ANALYSIS - OPERATIONS

During the previous SALP period, the Operations area was rated a Category 1. Plant operators clearly showed strong performance in dealing with operational events and performed in an exceptional manner on initial and requalification examinations. Operations management provided strong oversight of plant operations and displayed an outstanding safety perspective. The onsite and offsite committees effectively focused on safety. There were isolated operator performance problems attributed to inattention to detail that warranted increased operations management attention.

Operator performance continued to be strong this period as evidenced by their exceptional response to transients and planned plant evolutions. Operators did not cause any of the three automatic scrams during this period. Operator control and conduct of the refueling outage at Unit 3 was event free, an improvement from the performance during the 1994 Unit 2 refueling outage. However, early in the period, operators were involved in two significant events: (1) Unit 2 was placed in a configuration that resulted in thermal stratification and local boiling in the core; and (2) isolation of the emergency service water system discharge path placed the system in an unanalyzed condition. Operations management implemented timely and effective corrective actions for these events, which included developing and implementing the Operations Improvement Plan to address the common root causes. As a result, operators performed very well during the last six months of the period as demonstrated by few errors and strong response to plant events and degraded equipment.

Operations management oversight continued to be a strength this period. Effective corrective actions to address operator performance issues described above significantly reduced the negative trend identified early in the period. Management increased operator sensitivity and initiated several positive

programs to increase plant safety and reliability, including a new work control program, the Operations Improvement Plan, and an aggressive program to identify and correct "work around" problems.

The licensed operator requalification training program was good; however, performance during the latest initial license examination declined. Although all reactor operator applicants passed their initial examination, only three of eight senior reactor operator applicants passed their initial examination. Weaknesses also were noted in licensee evaluator performance in assessing operator performance on the simulator. These training program weaknesses require Operations management attention.

The Independent Safety Engineering Group (ISEG), the Nuclear Review Board (NRB), and the Plant Operations Review Committee (PORC) continued to provide strong oversight of plant operation activities. These committees were properly focused on safety issues and improving plant reliability, including use of probabilistic risk assessment techniques.

In summary, performance in the Operations area continued to be superior. Operator performance was outstanding in responding to events and planned evolutions. Management provided effective and safe oversight of plant activities. Operator training effectiveness declined this period. Oversight organizations, including the PORC, NRB and ISEG continued to provide effective reviews of station safety performance and contributed to improving plant reliability and safety.

The Operations area is rated a **Category 1**.

III. PERFORMANCE ANALYSIS - MAINTENANCE

The Maintenance area was rated a Category 2 during the previous assessment period. Aggressive management oversight of maintenance activities was apparent and major maintenance and surveillance activities were well planned and executed. The Plant Information and Management System was a positive factor in planning and scheduling maintenance tasks. Noted strengths included troubleshooting, root cause analysis, and the surveillance program's effectiveness in identifying degraded conditions in plant equipment. However, errors by maintenance personnel resulted in two plant shutdowns late in the period. Also, there were several instances noted of workers failing to follow procedures and use of inadequate procedures.

Site management's aggressive attention to maintenance and surveillance activities has continued from the previous period. Management has continued to reinforce their expectations and has increased their presence in the field. Management's increased emphasis on self-assessment and questioning attitude, coupled with strong root cause analyses and corrective actions to problems, have decreased the number of human errors and equipment failure challenges to plant operations. Effective management oversight has contributed to reducing and controlling the maintenance backlog. Effective supervisory involvement with the foreign material exclusion program has improved maintenance controls and work practices.

Strong maintenance performance has been observed since the last SALP, particularly during the last six months. Strengths included: planning and execution of corrective maintenance, equipment outages and on-line maintenance; performance of surveillance testing; and increased management oversight. PECO technician performance has improved during this period. They performed excellently during on-line replacement of safety-related batteries at Unit 3. The PECO process maintained sufficient controls in place to ensure that the batteries remained operable. Two I&C technicians identified a design error, that if not corrected, would have rendered two emergency diesel generators inoperable during plant operation, most likely for an extended period of time. No reactor scrams resulted from maintenance activities.

During surveillance testing activities, control of work, proper use of procedures, communications, and skills of the craft have become strengths. Surveillance testing has been effective at identifying degraded conditions including a diesel generator injector failure, high pressure coolant injection system valve motor failure, and a failed torus to drywell vacuum breaker. Also, I&C technicians performing surveillance testing identified equipment problems in the turbine control valve scram function instrumentation at Unit 3.

Maintenance planning has improved since the previous period. The planning organization has interfaced well between the operations, maintenance, and engineering organizations. Examples of strong planning and interface include repair of a main steam isolation valve packing leak and resolution of control rod scram timing problems. Use of on-line limiting condition for operation (LCO) maintenance has been very good, with its use routinely justified by probabilistic risk assessment (PRA) type analysis. Emergency diesel generator overhauls were routinely planned and conducted very well while both units were at power. Recently completed on-line overhauls of hydraulic control units were planned and completed in a safe and efficient manner. The use of outage windows for safety related equipment has led to very good planning. For example, successful maintenance and modification work was performed on both high pressure coolant injection systems while the reactors were at power.

Several instances of weak maintenance planning were noted early in the assessment period. Some examples included: an unclear work package for a preventive maintenance (PM) activity; incorrect blocking of electrical components; and poor preparation for a motor operated valve diagnostic test that caused the emergency service water system to be placed into an unanalyzed condition. Several minor examples of poor maintenance work due to inattention to detail and inadherence to procedures were noted during the SALP period. Some examples included: an inadvertent recirculation pump trip; non-nuclear maintenance personnel causing a partial loss of offsite power; not following an I&C procedure during a high pressure coolant injection (HPCI) system calibration; and improper identification of a relay that resulted in unnecessary removal of the HPCI system from service. Despite the human performance and procedure adherence problems noted above, this area was much improved over the previous period, and the majority of these problems occurred earlier in this period. Management has recognized these problems but continued oversight and emphasis are necessary to further improve maintenance planning and minor human performance and procedure adherence problems.

Plant material condition has been very good. Equipment deficiencies were properly identified, prioritized, tracked, and corrected. PECO also successfully used predictive maintenance tools to monitor equipment performance and to detect degradation prior to failures.

In summary, site management's aggressive attention to maintenance and surveillance activities has continued and contributed to excellent performance. Noted strengths included planning and execution of corrective maintenance, equipment outages, and on-line maintenance. Control of work, proper use of procedures, communications, and skills of the craft have become strengths during surveillance testing activities.

The Maintenance area is rated a **Category 1**.

IV. PERFORMANCE ANALYSIS - ENGINEERING

In the previous SALP period, performance was rated a Category 2. Site engineering management provided good oversight of activities. System managers performed generally well in expanded roles. Most technical issues were handled well, and self-assessments were beneficial. However, some examples of poor modification design or implementation, as well as slow resolutions of issues, occurred.

During this SALP period, site management refined the self-assessment and performance evaluation programs. Senior management provided an environment that was conducive to good initiatives, such as various equipment upgrades. Various managers were actively and appropriately involved in a wide range of engineering functions. Management used an effective process for managing the engineering workload; a steady reduction in backlogged engineering work was achieved. The licensee had a wide range of programs to promote and enhance the effectiveness and efficiency of engineering activities. Site overview committees contributed to enhanced safety, and engineering organization self-assessments were continually expanded, which enhanced overall engineering performance.

Technical issues were usually handled very well. The design, planning and implementation of modifications were usually good. Modifications were completed that will improve plant safety, reliability and ease of operation. Response to emerging issues, equipment problems, and event-related issues was particularly strong. The engineering organization demonstrated strength in recognizing safety issues and in responding and resolving these issues. This strength indicated good depth of technical knowledge of the facility components, systems, and processes. The licensee implemented effective problem identification and corrective action processes, and plant equipment deficiencies were promptly identified, evaluated, and corrected. Examples of excellent engineering work in direct support of plant operations included responses to a high pressure coolant injection (HPCI) system failure, feed pump turbine control problems, slow control rod scram times, battery bus grounds, Rosemount transmitter issues, and testing of the third offsite power source.

Notwithstanding the generally strong management involvement and technical efforts described above, some weaknesses were evident. These involved examples of problems in management systems, lapses in quality of technical work, and lapses in modification implementation. For example, an emergency diesel generator (EDG) system modification resulted in unplanned EDG inoperabilities and other problems. Contract engineering personnel implementation of design controls did not properly address a drawing error that led to a significant error in the modified design. Also, the modified design did not adequately consider EDG response if a postulated accident occurred when the EDG was already carrying its bus without offsite power. Further, the modification acceptance test caused an unanticipated loss of an emergency bus. Late in the SALP period the licensee initiated aggressive actions to improve the implementation of modifications. Other, more isolated lapses of technical performance involved a lack of progress in resolving a HPCI system steam line vibration condition, insufficient technical information in a licensing submittal regarding core spray pipe downcomer inspections, and, earlier in the period, a modification acceptance test error that caused contamination of the reactor building.

In summary, the licensee often displayed excellent performance. Management involvement and organizational self-assessments were beneficial. Good engineering work and direct support to the plant operating staff resulted in permanent improvement to the plant, as well as good resolutions of emerging issues and equipment problems. However, errors in modification work, in addition to some other lapses, indicated inconsistent engineering performance.

This area is rated a **Category 2**.

V. PERFORMANCE ANALYSIS - PLANT SUPPORT

In the previous SALP, performance in this area was rated a Category 2. Although programs were generally strong and being improved, overall performance was marred by breakdowns in adherence to in-plant radiation protection controls and procedures.

During this period, performance was generally strong and program enhancements continued. Although in-plant adherence to radiation protection (RP) controls advanced sufficiently to signal an overall improvement, isolated examples of procedure adherence problems indicate a need for ongoing attention in this area.

Overall, the licensee implemented an effective RP program. The RP organization was staffed by well qualified and knowledgeable personnel, decision making was at an appropriate level, and there was excellent management support of radiation protection initiatives. For example, when necessary, work was delayed in order to address radiation protection concerns. Overall, there was very good planning and control of radiological work activities including emergent work. RP procedures and policies provided for effective control of activities and were enhanced incrementally. Quality assurance personnel, the RP supervisor and manager, and corporate group

oversight of station RP activities provided overall very good performance-based oversight of station activities. Corrective actions for self-identified concerns were usually prompt, technically correct, and comprehensive.

The program to maintain occupational radiation exposure as low as is reasonably achievable (ALARA) was effective. Planning, preparation, mock-ups and training, shielding, video cameras, electronic dosimetry, and decontamination were used, as appropriate, to maintain occupational exposure ALARA. ALARA planning was comprehensive, and lessons learned, as appropriate, were incorporated into the planning process. The licensee set aggressive goals and has been impressive in substantially reducing occupational exposures.

The internal and external exposure control programs were very effective in controlling personnel exposure, as were the programs for radioactive material and contamination control. A state-of-the-art electronic dosimetry system was implemented to provide real-time personnel exposure tracking and control. Although overall performance was very good, occasional worker performance problems occurred. For example, early in the period, several workers performing as firewatches, failed to follow procedures and made improper entries into high radiation areas. Later in the period, some contractor workers failed to follow applicable procedures relative to the disassembly of a contaminated traversing incore probe shield. In these cases, weaknesses in communication and radiological control oversight were contributing factors that resulted in an inadequate understanding of the actual radiological conditions. Licensee attention to this area is warranted to assure that the implemented corrective actions are effective.

The radioactive waste management and shipping programs were well implemented, and a number of initiatives were taken to reduce radioactive waste, including establishment of a resin-reduction task force, enhancement of leak detection and tracking programs, decontamination of the upper portions of the refueling floor, and development of an incentive-based radwaste minimization program.

The licensee continued to implement an excellent radioactive effluent controls program. There was noteworthy effort to minimize routine liquid releases. The radiological environmental monitoring programs were effective and included very good quality controls.

The security programs continued to be very effective and benefitted from strong management support. Facility upgrades, including use of hand geometry access control, were implemented smoothly, and excellent on-line availability of equipment was achieved.

The emergency preparedness program demonstrated excellent safety focus and good use of self-assessment. Excellent performance was observed during the 1995 annual emergency exercise. Some minor errors occurred in emergency plan (EP) and procedure revisions that did not reduce program effectiveness.

Training was usually very effective in all plant support disciplines. However, there was no documented plan for EP training of corporate responders after a shift in responsibilities to corporate EP and some oversights were noted in the RP program-required reading, and early in the period, in training for radwaste shipping engineers.

In summary, during this period the licensee achieved overall improved performance. Radiation protection programs were strengthened, and worker support for radiation protection controls improved, although some procedure adherence problems remained. The security, radiological effluents control, and radiological environment monitoring programs remained strong. The emergency planning program was effective, but experienced some lapses in plan and procedure revisions, as well as training for corporate responders.

This area is rated a **Category 1**.

ENCLOSURE 2

PEACH BOTTOM UNIT 2 AND 3 PLANNED NRC INSPECTIONS

NOVEMBER 1995 - NOVEMBER 1996

IP = Inspection Procedure
RI = Regional Initiative
CO = Core Inspection
TI = Temporary Procedure (NRR program requirement)

IP NUMBER	TITLE	DATE
86750 CO	Solid Radwaste Management & Transportation of Radioactive Materials	12/4/95
81700 CO	Physical Security Program for Power Reactors (Visit #1)	2/26/96
71001 CO	Licensed Operator Requalification Program Evaluation	3/18/96
TI 2515/109	MOV Testing - GL 89-10	3/25/96
83750 CO	Occupational Radiation Exposure	7/8/96
82302 CO	Review of Exercise Objectives and Scenarios	8/19/96
83750 CO	Occupational Radiation Exposure (Unit 2 Outage)	9/9/96
84750 CO	Radioactive Waste Treatment - Environmental Monitoring	9/96 Est.
82301 CO	Evaluation of Exercises for Power Reactors	11/18/96
81700 CO	Physical Security Program for Power Reactors (Visit #2)	11/18/96

The routine resident inspection effort is not included in this schedule.