Enclosure 1

INITIAL SALP REPORT

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

REPORT NO. 50-272/88-99; 50-311/88-99

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

SALEM GENERATING STATION
DPR-70 AND DPR-75

ASSESSMENT PERIOD: JANUARY 1, 1988 - APRIL 30, 1989

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SUPPORTING DATA AND SUMMARIES

I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance on the basis of this information. The SALP program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. It 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 regarding the NRC's assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on June 28, 1989, to review the observations and data on performance, and to assess licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance". The guidance and evaluation criteria are summarized in Attachment 1 of this report. The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at the Salem Generating Station, Units 1 and 2 for the period January 1, 1988 through April 30, 1989.

The SALP Board was composed of:

Board Chairman

S. J. Collins, Deputy Director, Division of Reactor Projects (DRP)

Board Members

B. Boger, Acting Director, Division of Reactor Safety (DRS)
M. Knapp, (Part-Time), Director, Division of Radiation Safety and Safeguards (DRSS)
J. Joyner, (Part-Time), Division Project Manager, DRSS
W. Butler, Director, Project Directorate I-2, Office of Nuclear Reactor Regulation (NRR)
K. Halvey Gibson, Senior Resident Inspector, Salem
P. Swetland, Chief, Reactor Projects Section No. 2B, DRP

Attendees

J. Linville, Acting Chief, Reactor Projects Branch No. 2, DRP
R. Nimitz, Senior Radiation Specialist, DRSS
S. Chaudary, Senior Reactor Engineer, DRS
S. Pindale, Resident Inspector, Salem
W. Lazarus, Chief, Emergency Preparedness Section, DRSS
R. Bores, Chief, Effluents Radiation Protection Section, DRSS
R. Keimig, Chief, Safeguards Section, DRSS

II. BACKGROUND

II.A Licensee Activities

Unit 1 entered the assessment period at the end of the seventh refueling outage with the startup being delayed due to leakage identified at the lower canopy seal welds of some spare control rod drive mechanism (CRDM) penetrations. Unit 2 began the assessment period operating at full power in the midst of the fourth fuel cycle.

Unit 1 was restarted following the refueling outage on February 2, 1988. The unit experienced five reactor trips and three unplanned shutdowns during the 16 month assessment period. Additionally, there were several power reductions during the assessment period due to various causes, including Technical Specification Action Statement requirements and balance of plant maintenance. Unit 1 shutdown for the eighth refueling/maintenance outage on March 28, 1989, about two weeks before the originally scheduled April 15 start date, due to a degraded main power transformer. Major outage activities included steam generator tube eddy current testing and tube plugging, main steam safety valve and inverter replacements, control room human factors design changes, reactor protection system modifications, and main power transformer replacements.

During the SALP period, there were eleven reactor trips and two unplanned shutdowns at Unit 2. There were also several power reductions due to various causes. Unit 2 shutdown for the fourth refueling outage on August 31, 1988, and was returned to service on November 26, 1988. Major outage activities included steam generator tube eddy current testing and plugging, control room human factors design changes, reactor protection system modifications, RTD bypass manifold removal, and bottom mounted thermocouple installation.

At the end of the assessment period, the Unit 1 eighth refueling outage was continuing and Unit 2 was operating at full power. Section III.C summarizes all reactor trips and unplanned shutdowns that occurred for both units during the SALP period.

During the assessment period, Steven E. Miltenberger replaced Corbin A. McNeill as Vice President and Chief Nuclear Officer, and later, Stanley LaBruna was appointed Vice President - Nuclear Operations. Other licensee personnel changes were implemented at the following positions: General Manager - Salem Operations, Maintenance Manager, Technical Manager and Radiological Protection/Chemistry Manager.

II.B Direct Inspection and Review Activities

During the assessment period there were two NRC resident inspectors assigned to the site, except for a six month period when one inspector was assigned. Several NRC team/special inspections were conducted at Salem, including a Unit 1 readiness assessment team following the seventh refueling outage (January 4-8, 1988), a review of the December 22, 1987 Unit 1 service water system flooding event (January 4-7, 1988), a review of the circumstances associated with two personnel contamination events (November 30, 1988 - January 20, 1989), and a Unit 2 outage team inspection (October 17-28, 1988). An NRC Emergency Preparedness Inspection Team observed the annual, full participation, emergency exercise on November 29 - December 2, 1988.

A total of 3531 inspection hours (2353 annualized) were expended utilizing resident and region-based inspectors.

III. SUMMARY OF RESULTS

III.A Overview

The Salem units continued to operate in a safe manner during the assessment period, however a notable decline in overall licensee performance occurred when compared with the previous assessment. This was exhibited by an increase in the number of reactor trips and safety system challenges. Specifically, personnel errors, procedure implementation deficiencies, and inadequate supervisory oversight resulted in weaker performance in several functional areas. In contrast, excellent performance continued in the security area.

In Operations, plant transients caused by personnel and procedural errors were more frequent. Weaknesses in supervisory oversight and procedure control were noted. Root cause determinations were sometimes weak with regard to potential operator errors.

A decline in radiation protection and industrial safety performance occurred early in the SALP period, despite a significant upgrade in radiation control procedures. Enhanced training and management oversight resulted in improved performance at the end of the assessment period.

Maintenance performance also declined early in the period due to lapses in oversight and procedural controls. Licensee corrective actions during the SALP period resulted in a substantial improvement trend. Personnel errors and program deficiencies persisted in the Surveillance area despite significant licensee efforts to resolve these weaknesses. Although the program was basically sound, the inability to promptly resolve these weaknesses was noted as a concern.

In Emergency Preparedness, a strongly supported program was also noted. However, performance in the annual exercise declined and correction of a long standing deficiency in the Salem Technical Support Center was not aggressively pursued to resolution.

Licensee initiatives to improve the quality of Engineering and Technical Support were effective but implementation problems persisted during the transition to new programs.

A significant decline in Quality Verification efforts was noted. Inconsistent performance and reduced expectations resulted from a lack of management focus and supervisory oversight in some areas. The effectiveness of corrective action programs was inconsistent.

Overall, the licensee identified these declining performance trends and took corrective actions to resolve most of the concerns during the period. The Salem station appears to be in a pivotal period in the licensee's attempt to upgrade the programs and standards at the units. The NRC encourages the licensee's initiatives to review and self-identify program weaknesses and supports the pursuit of excellence throughout Artificial Island. It appears, however, that continued management focus and attention is warranted to insure that these standards have been accepted and implemented at all levels throughout the Salem organization.

III.B Facility Performance Analysis Summary

Functional Area	Last Period (10/1/86-12/31/88)	This Period (1/1/88-4/30/89)	Trend
Plant Operations	2	3	
Radiological Controls	2	2	
Maintenance/Surveillance	1/2*	2	
Emergency Preparedness	1	2	
Security	1	1	
Engineering/Technical Support	2	2	Improving
Safety Assessment/ Quality Verification	1/2**	2	

* Rated as separate functional areas.

** Similar areas (Assurance of Quality, Category 1 and Licensing Activities, Category 2) were assessed last period.

III.C Reactor Trips and Unplanned Shutdowns

Unit 1

Event Description			
Date	Power Level	Root Cause	Functional Area

1. The reactor tripped automatically on high flux while adjusting a nuclear instrument detector. A technician performed procedure steps out of sequence and failed to bypass the output trip signal before pulling the channel fuses.

   2/24/88 4% Personnel Error Surveillance

2. The reactor was tripped manually after the turbine governor valves began to drift shut due to loss of control oil pressure. Operators failed to properly diagnose a previously annunciated turbine control oil reservoir low level alarm, which resulted in the loss of both control oil pumps.

   3/30/88 100% Personnel Error Operations

3. A 15-day unplanned shutdown commenced following the 3/30/88 trip to replace leaking (about 110 gpd) steam generator (SG) tube plugs.

   3/30/88 0% Component Failure NA

4. The reactor tripped automatically on turbine trip during on-line surveillance testing of the turbine trip mechanism.

   8/31/88 100% Unknown NA

5. The reactor tripped automatically on low SG level due to operator failure to select an alternate controlling steam pressure channel during surveillance testing.

   2/6/89 100% Personnel Error Operations

6. An unplanned shutdown was made due to a component cooling water leak in the supply line to a reactor coolant pump.

   2/15/89 100% Component Failure NA

7. The reactor tripped automatically on turbine trip because a technician failed to follow the surveillance test procedure. The initial conditions for performance of a turbine impulse pressure functional test were not met prior to proceeding with the surveillance activity.

   2/18/89 0% Personnel Error Surveillance

8. An unplanned shutdown was made due to high combustible gas concentrations in the main power transformer oil. Confirmed transformer degradation caused an early start of the refueling outage scheduled for 4/15/89.

   3/23/89 100% Component Failure NA

Unit 2

Event Description			
Date	Power Level	Root Cause	Functional Area

1. The reactor tripped automatically on low loop flow because a technician did not follow the procedure for restoring a reactor coolant loop flow transmitter to service. The transmitter valving manipulations were performed out of sequence.

   4/21/88 100% Personnel Error Surveillance

2. The reactor tripped automatically on turbine trip due to high SG water level. Turbine control equipment problems and/or inappropriate operator response contributed to the high SG level.

   4/22/88 18% Unknown NA

3. The reactor tripped automatically on high power range negative flux rate. One control rod dropped into the reactor core while inserting rods to reduce power for a surveillance test.

   5/13/88 97% Unknown NA

4. The reactor tripped automatically and safety injection actuated due to spurious initiating signals generated when the "C" vital instrument bus inverter failed. The non-redundant engineered safety features sensor power supply design contributed to the event.

   6/22/88 100% Component Failure Engineering

5. The reactor tripped automatically due to a spurious trip signal caused by the loss of vital instrument bus inverter "C".

   7/30/88 80% Component Failure Engineering

6. The reactor tripped automatically on high SG level due to a failed open feedwater control valve. The control valve positioner had become disconnected, due to vibration in combination with a poorly designed lockwasher.

   8/31/88 72% Component Failure NA

7. The reactor tripped automatically on low SG level. Inadequate procedural guidance resulted in improperly setting the control air regulator for a feedwater control valve positioner. The resultant SG level oscillations caused the trip.

   11/28/88 25% Defective Procedure Maintenance

Event Description

Date	Power Level	Root Cause	Functional Area
8. An unplanned shutdown was made due to high combustible gas concentrations in the main power transformer oil.			
12/9/88	100%	Component Failure	NA
9. The reactor tripped automatically on low SG water level due to loss of feedwater. Inadequate procedures for operation with reduced circulating water capacity and only one heater drain pump caused the loss of both feed pumps due to low suction pressure.			
2/5/89	60%	Defective Procedure	Operations
10. The reactor tripped automatically on low SG water level following the loss of vital instrument bus inverter "D". The inverter control power fuse fell out of its fuse holder. A safety injection resulted from spurious actuation signals caused by the loss of inverter power.			
3/12/89	100%	Unknown	Engineering
11. The reactor tripped automatically during surveillance testing on low SG water level when plant operators did not prevent SG level from reaching the low setpoint with a coincident steam flow channel bistable inoperable and tripped.			
3/29/89	0%	Personnel Error	Operations
12. The reactor tripped automatically on low SG water level. A latching relay malfunctioned during a main steam bypass valve surveillance test, causing inadvertent closure of a main steam isolation valve and the consequent SG level oscillations.			
4/11/89	100%	Component Failure	NA

IV. PERFORMANCE ANALYSIS

IV.A Operations (1437 hours, 41%)

IV.A.1 Analysis

Plant Operations was rated as a SALP Category 2 during the previous assessment period. Licensee strengths included a strong management team and an improved trip frequency. Personnel error due to inattention to detail and poor interface communications was noted as an area in need of improvement.

During the current SALP period there were 16 reactor trips between the two units (five on Unit 1, 11 on Unit 2), including six trips directly or indirectly attributable to the operations functional area. The 16 reactor trips were more than twice as many as during the previous assessment (seven). The number of trips two SALP cycles ago was 18. The licensee's trip reduction efforts appear to have been ineffective since the last SALP. The root causes of the reactor trips were consistent with overall performance concerns at Salem including personnel errors and procedure implementation deficiencies.

Personnel errors resulting from failure to follow procedures and inattention to detail resulted in six reactor trips during the assessment period. Three of these involved operations personnel. Three Technical Specification (TS) surveillances were missed or late due to personnel error by operations personnel and inadequate supervisory review. On two occasions operators failed to enter TS Action Statements as required. Two additional examples of operations personnel errors included failure to follow a surveillance procedure, which resulted in blackout loading on a vital bus, and poor communication between operations supervisors, which resulted in fuel handling with the fuel building ventilation inoperable. In response to these issues, the licensee has placed additional supervisors on shift during outages and has counseled Operations Department supervisors concerning better oversight and responsibility. However, since personnel errors have continued to occur, further management attention is needed in this area.

Operations management did not always provide adequate guidance to the operators relative to non-routine situations. Inadequate direction for operations support of maintenance activities resulted in a diesel generator day tank being overfilled and an NRC identified misalignment of a service water header chloride inlet valve. In addition, prompt actions were not implemented by operations management relative to a Station Operations Review Committee (SORC) directed action for a non-seismic diesel generator fire protection relay, and the tracking of steam flow channels which were drifting non-conservatively. NRC and station management involvement was needed to ensure correction of these deficiencies. In order to address the shortcomings in the conduct of day to day routine plant evolutions, increased management oversight is needed in the operations area to ensure that adequate procedural guidance is established when appropriate, and procedures are followed.

Deficient procedures contributed to two reactor trips, one in the operations area. One TS surveillance was missed due to an inadequate operations

procedure. The licensee has instituted a procedure upgrade program and a work standards improvement program in response to NRC concerns relative to personnel error and procedure problems. However, the programs appeared to have been focused mainly on maintenance and surveillance activities. Administrative control of procedures and documents in the control room needs improvement, in that examples of wrong Technical Specification pages, misfiled documents, missing procedures, an incorrect procedure revision, and inaccurate reference material were identified during the SALP period. Each of these deficiencies was corrected and QA reviews of control room files, procedures, and materials were periodically performed to identify additional deficiencies. Additional management action is needed in this area because deficiencies in the control of documents in the control room continued to be identified.

Staffing in the Operations Department was adequate and programs were in place to maintain and enhance staffing levels for both licensed and non-licensed operators. A five shift operator rotation is in effect at each unit. Control room professionalism was generally good. Although numerous examples of personnel error and inattention to detail occurred during routine operation, immediate operator response to reactor trips and implementation of emergency operating procedures was very good. Reactor startups and shutdowns were generally well controlled and supervised.

Licensee event and problem evaluation and response was usually prompt and comprehensive. However, the root cause of four reactor trips was not determined by the licensee. Certain self assessments and root cause investigations have been weak, in that the level of aggressiveness with which issues were pursued decreased when a conclusive root cause for a trip or equipment problem was not determined within a short period of time. In some cases, root cause investigations were incomplete because operations management was reluctant to accept responsibility for possible operator errors, and this aspect was not pursued as aggressively as possible equipment deficiencies. On several occasions unit restart was authorized based on the replacement of suspect components or the completion of actions based on supposed problems, without substantive evidence that all possible causes had been identified or would be resolved. Examples include a turbine electro-hydraulic control (EHC) rate amplifier card which was replaced even though it tested satisfactorily, and a separate occasion where actions were taken to clean and monitor pressure in the turbine auto stop oil system in response to a supposed, one-time momentary clog in the system. Further instances of slow or weak root cause evaluation, related to two reactor trips and loss of a safety-related 4 KV electrical bus late in the period, prompted a violation and an NRC request for further information from the licensee regarding circumstances surrounding the events. Continued management focus on root cause determinations is needed.

Initial license exams were administered to two SRO and three RO candidates during the SALP period. Of this group, one SRO failed. Requalification exams were taken by eight SROs and four ROs. Of this group, one RO failed. EOP usage weaknesses identified during the requalification program evaluation were promptly corrected. The licensee's operator requalification program was upgraded to a satisfactory rating during the SALP period.

The licensee has begun control room human factors modifications which are

planned to be installed over a three refueling outage period for each unit. The licensee has taken a conservative approach to minimize the chance of operator error due to control room differences by assigning licensed reactor operators to specific units. In response to an NRC concern, operations management took action to develop a written plan to define the actions necessary to indoctrinate licensed operators on the opposite unit if a need for reassignment should arise.

Daily status and planning meetings were well structured, thorough and concise. Meaningful exchanges of unit status, identified problems and scheduled evolutions took place. The operations department prioritized work based on plant needs and the planning and maintenance organizations responded accordingly. The work control center coordinated activities between the support groups and operations department to facilitate removal and return of systems and equipment to service. Toward the end of the assessment period, equipment outage duration and operational priorities were discussed and emphasized at planning meetings to ensure proper coordination between departments and timely return of equipment to service. The quality of housekeeping in the station was inconsistent during the SALP period and was directly related to the level of management attention and emphasis on housekeeping matters.

The licensee's Fire Protection Program was well staffed and maintained. The persons in charge of the program were competent and received considerable corporate management backing in their effort to improve the program. Evidence of the management support was the recent purchase of state of the art firefighting equipment. The licensee has addressed NRC concerns in the safe shutdown and fire protection areas, for example the work to upgrade fire barriers is proceeding expeditiously. Limited examples of late firewatch patrols and missed fire protection surveillances due to inadequate administrative controls or communication within or between the operations and fire protection departments occurred during the period. Increased fire protection management attention has been effective in preventing similar occurrences in the latter part of the assessment period.

In summary, weaknesses were identified in operations in the areas of supervisory oversight of routine day to day operations. The number of plant trips and frequency of personnel errors have increased since the previous SALP cycle. Operations management did not always provide adequate guidance to the operators for non-routine evolutions. Procedure establishment, use and compliance require continued station management attention. Some root cause analyses and corrective action determinations lacked aggressiveness and thoroughness especially in cases relating to possible operator errors. The licensee has instituted actions to improve performance in these areas with mixed results. Operator response to plant transients was very good. The planning and work control processes were noted as strengths as was the fire protection program.

IV.A.2 <u>Performance Rating</u>

Category 3

IV.A.3 Recommendations

Licensee: Present to NRC Region I, the licensee assessment of corrective actions needed to reduce challenges to safety systems and improve the analysis of plant events.

NRC: Conduct an Independent Performance Assessment Team Inspection.

IV.B Radiological Controls (503 hours, 14%)

IV.B.1 Analysis

This area was rated Category 2 during the previous assessment period. Identified weaknesses included procedure quality and implementation, the adequacy of the chemistry QA/QC program and the corrective action system. Strengths included ALARA planning and relationships between radiation protection personnel and other departments.

There were two outages which challenged the radiological controls program this assessment period. NRC observations during the first outage, the Fall 1988 outage at Unit 2, identified a number of significant problems which prompted enhanced NRC attention to this functional area. Overall licensee response to the identified problems was aggressive and timely. Specifics regarding the problems identified and licensee actions taken to improve performance during the Spring 1989 outage at Unit 1 are discussed in this assessment.

During the current assessment period, the licensee addressed procedure quality by revising 44 existing procedures and writing 20 new ones. This initiative addresses a long-standing concern relative to procedure adequacy. The new procedures were improved in quality and usefulness and resolved NRC's major concerns with procedure adequacy prior to beginning the Unit 2 refueling outage. Implementation of these procedures was weak during the Unit 2 outage (September 1988 to November 1988). This problem was attributed to ineffective training in the new procedures, weak communications, and inattention to detail by both supervisors and technicians.

In response to the concerns identified during the Unit 2 outage, management ensured that both licensee personnel and contractors were properly trained in the new procedures prior to the scheduled Unit 1 outage in March 1989. The licensee augmented its routine radiological controls training and qualification program with a special six week training program, which enhanced the routine program. In addition, management stressed the need to adhere to the new procedures. These efforts resulted in significant improvements in procedure implementation during the Unit 1 outage.

NRC inspection of Unit 2 outage activities identified weaknesses in the adequacy of corrective actions for radiological occurrences, a problem previously identified by the station QA group. An example of a weakness that was identified by the licensee and not effectively resolved involved problems in High Radiation Area access controls. Further, there was little evidence that major weaknesses identified in the field by the Radiological Assessor during the Unit 2 outage were being acted upon. The NRC inspection also

identified that supervisory oversight of on-going Unit 2 outage activities was weak as evidenced by radiation protection technician and radiation worker performance problems.

To address these concerns in preparation for the Unit 1 outage, radiological protection management personnel changes were made and the in-plant radiological controls group was reorganized following completion of the Unit 2 outage. In addition, plant management initiated weekly meetings to discuss radiological occurrences, Radiological Assessor findings, Industrial Safety concerns and Quality Assurance findings.

NRC observations during the Unit 1 outage indicated the licensee's actions were effective in improving the supervisory and management oversight of outage radiological controls activities and the management and resolution of radiological occurrences and Radiological Assessor findings. No significant external radiological controls concerns were identified during the Unit 1 outage, including during steam generator work. The program to minimize airborne radioactivity for generator work was particularly noteworthy. Control and minimization of contaminated areas and contamination was good and allowed personnel to perform work on the steam generator platforms without the need to wear respiratory protection equipment.

Problems continued to exist during the SALP period in the area of worker practices relative to housekeeping. For example, candy wrappers were observed in the radiological controlled areas indicating a lack of worker and supervisory sensitivity to potential ingestion of radioactive material. Housekeeping was considered poor throughout the radiological controlled areas of the facility due to inattention to and lack of accountability for housekeeping. Observations toward the end of the period indicated some improvement in the areas that have received management attention such as containment, but problems continued to exist in the auxiliary and fuel handling buildings.

NRC review during the Unit 2 outage identified significant industrial safety concerns involving prevention of heat stress and work control measures for high elevations, and prompted a special review by the Occupational Safety and Health Administration (OSHA). OSHA subsequently took enforcement actions for the observed problems. NRC review during the Unit 1 outage indicated improvement in the areas of concern.

In general, over the assessment period it appears that the quality of audits, surveillances and assessments was improving. The licensee has initiated a performance based surveillance program. The licensee has also begun to use outside technical specialists to enhance audit performance. The audits, in conjunction with self-assessments by the Radiological Assessor, are now considered effective in identifying problems.

A number of problems were identified relative to the maintenance of the post-accident sampling system, indicating lack of attention to this important system. Repeated NRC involvement was needed to focus licensee attention on this concern.

Consistent with the last assessment period, a generally effective ALARA program is maintained and implemented. Station aggregate exposure compares favorably with industry averages. Performance is close to industry best percentiles. Aggressive oversight and control of major exposure tasks was noted. A number of actions were taken to improve long term ALARA performance. Special shielding was used during steam generator maintenance which reduced exposure dose rates by about a factor of 5. Dose reduction actions that could reduce aggregate exposure over the life of the facility are aggressively pursued. Fuel performance has been good. Radiological controls personnel were recently assigned to the planning and scheduling department to evaluate work packages and interface between work groups and the radiological controls group. A new ALARA group was recently established. This has provided for improved ALARA planning.

Isolated problems were noted in individual work group performance. For example personnel were observed standing in about a 100 mR/hr field waiting for tools to disassemble the reactor vessel head shroud. The problem indicates potential concerns with some supervisors and workers regarding sensitivity to ALARA and a need for more attention to ALARA training.

Radiological confirmatory measurements inspections indicated good performance by the licensee in this area. The review of the radiological environmental monitoring program (REMP) indicated an adequate program was in place. Performance during the last assessment period in the area of solid radioactive waste and transportation was considered effective. Two violations involving failure to perform an audit and failure to properly survey a truck cab were identified during this SALP period. These violations were considered to be isolated and were not indicative of a programmatic problem.

In summary, early in the assessment period licensee performance declined from that noted in the previous SALP. Licensee corrective actions and self-assessment processes were initially ineffective in improving overall performance which prompted NRC involvement to stress the need to initiate effective program improvement. Subsequent management attention has resulted in significant performance improvement, as noted during the Unit 1 outage late in the period. Performance was adequate in the areas of radioactive effluent controls and monitoring, radwaste transportation, and good in the area of radiological confirmatory measurements.

IV.B.2 Performance Rating

Category 2

IV.B.3 Recommendations

None

IV.C Maintenance/Surveillance (648 hours, 18%)

IV.C.1 Analysis

The last SALP assessment rated the maintenance functional area a Category 1 and the surveillance functional area a Category 2. Generally strong performance was noted in both areas, with missed surveillances due to personnel error and inconsistent implementation of the instrument and gauge calibration program identified as weaknesses.

Maintenance:

During this assessment period there was a reduced level of maintenance management involvement and supervisory oversight in day to day activities. This resulted in a laxness with respect to implementation of the maintenance program. Procedure implementation deficiencies were identified including the failure to establish adequate maintenance procedures for disassembly, cleaning and preparation for removal of an emergency diesel generator, the failure to have safety related pump alignment procedures at the work location while the maintenance was being performed, and storage of transient equipment contrary to administrative procedures.

Poor maintenance practices such as use of information only drawings, work performed outside the scope of that specified on the work order, and deficient radiological controls and housekeeping related to maintenance activities were observed. Inadequate documentation of troubleshooting activities was identified as a weakness in the licensee's program, in that as found data was not recorded in some cases, and problem resolution was delayed due to activities being repeated since detailed documentation of previous work performed was not available.

Return of safety-related equipment was not aggressive in all cases, in that, equipment was not promptly returned to service following maintenance unless the action statement would soon expire. Inattention to detail in the proper execution of maintenance activities resulted in failures of operational retests and maintenance rework. Examples include leads not reconnected, valve air supplies not restored, and valve limit switch settings not reverified following maintenance/surveillance activities.

A new maintenance manager was assigned in November 1988. A program to upgrade work practices and supervisory oversight has been instituted. Station and maintenance management has communicated their expectations relative to acceptable work standards to the engineers, supervisors, and planners during group meetings. A continuation of these meetings at the worker level is planned in the near term. The work practices improvement plan consists of work practice standards and procedure use guidelines which include supervisor responsibilities; housekeeping, documentation and safety requirements; and guidance on procedure compliance and attention to detail. The structure of daily planning meetings has enhanced communications between operations and maintenance supervisors relative to timely return of equipment to service.

Daily planning meetings were effective in communicating management philosophy, including the priority of the operating unit over outage activities. The transfer of work and plant status information between departments, and the scheduling and coordination of activities were generally effective. Planning

and prestaging for the refueling outage was aggressive during the SALP period. The use of outage shift managers and containment coordinators was a strength, in that this increased level of oversight of outage activities in the field assured that problems were resolved in a timely manner.

Maintenance planning and execution of several major unscheduled activities such as the repair of a service water piping pressure tap, replacement of main power transformers, repair of a component cooling water leak in containment and replacement of containment spray piping were well coordinated and controlled.

Since the implementation of licensee actions was continuing at the end of the SALP period, full assessment of the effectiveness of these actions could not be made. However, an improvement in supervisory oversight and the administrative control and content of work packages has been noted. Inconsistencies with regard to procedure establishment and use continue to be observed. Maintenance personnel are experienced and knowledgeable. However, continued management effort in communication and implementation of the work practices improvement plan elements including holding the work force accountable is needed to ensure an improved level of performance in the maintenance area.

Surveillance:

In the surveillance area, personnel errors involving failure to follow procedures, inadequate supervisory oversight and poor communication continued to be a weakness and resulted in a significant number of reactor trips and missed surveillances during the SALP period.

Six reactor trips were caused by personnel failure to follow procedures and inattention to detail during maintenance/surveillance activities, three involving maintenance personnel. There was an increase in the number of missed or late Technical Specification surveillance tests during the SALP period attributable to personnel errors or poor administrative controls. This is partly attributable to inaccurate or incomplete information inputs to the computerized maintenance and surveillance tracking system, Managed Maintenance Information System (MMIS). Several missed TS surveillance tests were identified as a result of increased scrutiny of the surveillance program by the licensee. One of these resulted in an emergency TS change. No missed surveillances resulted from maintenance personnel errors. Missed or late surveillances caused by other station groups such as operations and chemistry are discussed in the appropriate functional area section.

The licensee has initiated several programs to enhance surveillance scheduling and tracking and ensure surveillances are completed as required. These include the Technical Specification (TS) coordination project instituted to validate the MMIS database and surveillance procedures relative to TS surveillance requirements. Several discrepancies including TS surveillances not historically performed or performed at an improper frequency were identified and corrected as a result of this project. A surveillance coordinator was assigned within the technical department to maintain the MMIS database, to develop, review and issue scheduling information and to monitor

the overdue list in an effort to prevent missed surveillances. An upgrade of the gauge calibration program was completed at the end of the assessment period. Procedures to implement and control the program were being developed. As these corrective actions are being developed and implemented, surveillances have continued to be missed indicating that corrective action implementation was not timely or fully effective. Continued management attention is needed in this area to ensure timely, effective implementation of corrective actions including proper oversight, scheduling and coordination of surveillance activities.

In summary, reduced management and supervisory oversight of maintenance activities resulted in a laxness in the implementation of the maintenance program. A new maintenance manager has been assigned and a work practices improvement plan was instituted which resulted in some improvement in execution of maintenance activities late in the period. Outages were well planned and controlled. Personnel errors in the surveillance area resulted in an increase in the number of reactor trips. Although the missed or late surveillances did not result in safety significant problems, the long-standing nature of the problem and the inability to promptly correct the problem indicates a weakness in management attention to this issue. Increased management action is needed to ensure proper oversight, scheduling and coordination of surveillance activities.

IV.C.2 Performance Rating

Category 2

IV.C.3 Recommendations

None

IV.D Emergency Preparedness (305 hours, 9%)

IV.D.1 Analysis

There is a consolidated Emergency Plan for the Artificial Island complex, including the Salem and Hope creek facilities. Consequently, the assessment of emergency preparedness is a combined evaluation of both facilities' emergency response capabilities.

The previous SALP rated Emergency Preparedness as Category 1. The licensee had demonstrated strong emergency response capability during the Hope Creek-based exercise. No exercise weaknesses or areas for improvement were identified. There was no Salem-based exercise. The licensee had maintained a strong management awareness of and commitment to emergency preparedness. One weakness was identified regarding the adequacy of the Salem staff response to pager call-in tests.

During this assessment period, a Salem based full-participation exercise took place which involved Delaware and New Jersey. It included an ingestion pathway response in New Jersey. There was no full-scale exercise for Hope Creek. Two routine emergency preparedness inspections were conducted and the Resident Inspector observed several training drills.

During the full-participation exercise two weaknesses were identified by the NRC. One weakness involved the fact that the Control Room and Technical Support Center staffs did not recognize postulated containment failure for an hour and forty minutes. The other weakness involved a communication problem; the Emergency Response Manager did not inform the Emergency Operations Facility staff that recovery conditions had been attained. In addition, several other areas of lesser significance were identified. Remedial drills demonstrated effective corrective action for all identified exercise weaknesses with one exception, recognition of containment failure, which will be evaluated in a future exercise.

In other areas, corrective actions have been completed regarding pager call-in response. Management also responded to NRC concerns and took steps to improve the quality of dose projection calculations and field monitoring techniques.

Sixteen Unusual Events (UEs) were declared during this assessment period. Licensee response to the events was generally in accordance with procedures; however, some areas for improvement were identified. Two similar events at Salem were classified differently (one as a UE and one not classified), indicating inconsistent interpretation and use of EAL classification procedures by the operators. The procedures have been revised to provide clarification. On two other occasions, inaccurate or incomplete information was provided to the NRC Headquarters Operations Officer. A Hope Creek UE was declared 45 minutes after the event had begun. Management recognized the need for corrective action in these cases and reemphasized to the Senior Reactor Operators the importance of prompt, accurate declarations.

A reorganization placed the Emergency Preparedness Department in the Nuclear Services Department, which is intended to enhance corporate involvement in this area as the Nuclear Services Department General Manager (GM) has an operations and emergency response background and has maintained close contact with the emergency preparedness program (EPP). Corporate management involvement and interest in this area was evident by the considerable amount of effort by the onsite Vice Presidents devoted to emergency preparedness issues, including off-site interfaces. Support of and cooperation with the states remained at a high level. One new staff position, requiring a radiation protection background, was added to emergency preparedness. Two senior reactor operators are to be assigned full time to the EPP staff.

Emergency Preparedness Training (EPT) was a collaborative effort between EPP and the Training Department (TD). The TD was changing its approach to EPT: additional trainers are being qualified; a modular methodology based on Job Task Analysis will be used to ensure trainers have an adequate understanding of emergency response organization staff needs; and the frequency of weekly training drills has been revised to one for each site every two weeks (on a trial basis). At least three persons were qualified for each position in the Emergency Response Organization.

The licensee recently affirmed that the Salem Technical Support Center (TSC), an interim TSC per the Salem Unit 2 License, has not met NRC design requirements regarding ventilation. This is a condition which has existed for eight years. The licensee committed to resolve the deficiencies by October 1989.

Under the current situation, in the event TSC evacuation is required due to uninhabitability, the Salem TSC staff will relocate to the Hope Creek TSC.

In most areas the licensee demonstrated a high level of interest and involvement in maintaining emergency response capability: the licensee had an excellent Rumor Control organization, which could be manned by about 300 people on two shifts; an upgraded route alerting mechanism was developed; and a VHS tape was developed to train offsite workers in radiological self-protection. Siren availability was 98.5%. Ten independent, redundant and diverse offsite communication systems were in place. The Emergency News Center (ENC) was located about 7.5 miles from the site. Although it was not required, an alternate Emergency News Center has been identified and logistics arranged to support activation, if necessary.

In summary, the licensee maintained a good Emergency Preparedness Program. Management remained involved, was reasonably responsive to NRC concerns, and maintained an adequate staff for the Emergency Response Organization. An effective training program has been maintained. Salem staff performance during the annual exercise was not at the same high level as that noted in the previous Hope Creek exercise; however, it was acceptable. There were isolated event classification problems. The licensee's corrective actions with regard to resolving Salem TSC operability concerns are scheduled to be completed by October 1989.

IV.D.2 Performance Rating

Rating: Category 2

IV.D.3 Recommendations

None

IV.E Security (209 hours, 6%)

IV.E.1 Analysis

One security program covers Salem and Hope Creek, and the protected areas and security staffs overlap. Accordingly, this assessment of security applies to both sites.

The previous SALP rated the Salem and Hope Creek security program as Category 1. This rating was largely influenced by management's attention to and involvement in the program, an effective self-appraisal program, a clear understanding of NRC security objectives and a good enforcement history.

Management's attention to, and involvement in, assuring the implementation of an effective security program remained evident. The licensee was very effective in maintaining good support for the security program from other functional groups at both stations. Frequent organization interactions and good working relationships were apparent from the professional attitude of employees toward the security program, as well as the attention given by the maintenance group to the prevention and correction of problems with security systems and equipment.

As further evidence of management's interest in an effective and quality program, it was noted that all security shift supervisors, who provide around-the-clock oversight of the contract security force, attended a yearly training course given by the licensee on regulatory and security program requirements and objectives. In addition, security management continued to participate in the Region I Nuclear Security Organization and in other nuclear industry groups engaged in nuclear security related matters.

The licensee also continued to implement a self-initiated appraisal program carried out by security management and supervisory personnel. Adverse findings were promptly resolved and provided to training personnel to factor into the training program to prevent their recurrence. The appraisal program is in addition to the NRC's required annual program audit that is conducted by quality assurance personnel. The last annual audit was very comprehensive in both scope and depth. Audit findings were distributed to appropriate management personnel for review, and corrective actions for deficiencies were prompt and effective. This also demonstrated the licensee's desire to implement an effective and quality security program.

During this assessment period, the licensee appointed a new site security manager. The new security manager was promoted from within the existing organization, and the transition went smoothly which was indicative of good planning and effective management.

The security force contractor had effective management as was evidenced by continuous onsite contractor management, steps taken to improve the security program (e.g., employee benefits, training aids, and better equipment), and the low turnover of personnel (about 7%). The contractor also implemented changes to its supervisory structure, which eliminated duplicate supervisory positions between the licensee and the contractor.

Staffing of the security organization appeared adequate, as evidenced by a limited use of overtime and a low backlog of work. The installation and maintenance of some state-of-the-art systems and equipment during this period significantly reduced the use of compensatory posts for systems and equipment failure and, thus, reduced the need for extensive overtime. Both the licensee's proprietary supervisors and the contractor's supervisors were well trained and experienced, and exhibited a conservative and positive attitude toward security. Security force personnel were also well-trained and exhibited high morale and professionalism in carrying out their duties. The licensee's efforts to establish and maintain such a professional image for the security force was another indicator of the licensee's desire to implement a quality security program. It was also reflected by the generally excellent state of cleanliness in all security facilities.

The training and requalification program was well developed and carried out by a Training Administrator and two full-time instructors. In addition to initial and requalification training, on-the-job performance evaluations were conducted which test the proficiency of individuals on general and specific security program requirements. The on-the-job performance evaluations provided management the ability to review and enhance the performance and job knowledge of security personnel and to correct deficiencies as they were

detected. This was another initiative that was indicative of the licensee's desire to implement an effective program.

Several minor deficiencies were identified that were promptly and effectively corrected. The licensee's good enforcement record during this period is attributed to management's involvement in the security program, the continuing self-appraisal program, comprehensive annual audits, and the security training program.

The licensee submitted three security event reports pursuant to 10 CFR 73.71(c) during the assessment period. One report involved an inadvertent tailgating incident and the other two reports involved security guards who were inattentive to duty. The licensee's actions were prompt and effective in each case. During this period, the licensee also developed a program to minimize the recurrence of inattentive guards; the program includes limiting overtime and conducting organized discussions on topics such as proper nutrition and physical fitness.

An NRC Safeguards Regulatory Effectiveness Review (RER) of the Island reviewed the protected area boundary and identified several potential weaknesses associated with the Salem facility due to older equipment that the licensee had planned to replace. The licensee was responsive to the RER findings and implemented short-term corrective measures where necessary. However, several of the potential weaknesses were readily apparent to members of the RER team and should have been identified and corrected by the security organization.

The licensee submitted one change to the contingency plan under 10 CFR 50.54(p). This change was made to provide clarification to certain areas in the plan. This was indicative of the licensee desire to provide its security force with unambiguous instruction. The change was clear and fully described the issues. Prior to the submittal of this change, the licensee discussed the change with Region I safeguards personnel at a licensee requested meeting.

In summary, the licensee continued to implement a highly effective and quality security program for Artificial Island. Management interest in the program remained evident through its continued support and attention to program needs.

IV.E.2 Performance Rating

Category 1

IV.E.3 Recommendations

None

IV.F Engineering/Technical Support (274 hours, 8%)

IV.F.1 Analysis

The last SALP rated the engineering support area as Category 2. The assessment identified NRC concerns in management support and overall quality

in the engineering and technical support area. The last SALP also indicated that the licensee had initiated some long term corrective actions to address these concerns.

During this SALP period, significant changes within the engineering department have been effected. These changes are intended to improve engineering's interaction with the station staff. They included a project matrix organization, a new design change control process, and establishing a new relationship between the engineering organization and the plant staff. The newly defined performance based relationship between the engineering (service provider) organization and the plant staff (client) appeared to work well and increased the effectiveness of engineering support by better prioritization of work.

Senior engineers, designated as Project Managers, coordinated and were responsible for design changes and modifications from inception to completion. This concept resulted in enhanced personnel accountability, in improved design change control, and in better project development and implementation.

The implementation of the organization and project management concept in the engineering department allowed the licensee to effectively schedule large multidisciplinary projects. This approach also allowed the staff to be available through the unit supervisors to work on smaller projects. This flexibility combined with the system engineers provided better coverage for the entire plant. The plant staff involvement in projects was assured by the system engineers and QA personnel on the project team.

Examples of the effectiveness of the changes described above include; recovery from a service water bay flooding event, resolution and prevention of reactor head penetration leaks in both units, and resolution of cracks in the bodies of containment spray test isolation valves. The licensee's actions in addressing and resolving these issues were well planned and organized, engineering evaluations and root cause analyses were technically sound, and implementation of corrective actions were timely and well controlled.

A pre-established workbook approach to design change package (DCP) development was initiated. The new design change procedures and checklists provided better configuration management controls. The supporting information within these packages appeared to be effective in providing appropriate aid to installation in the field. This initiative was an improvement over the old, less formal process. Early in the SALP period, the NRC's outage team inspection of the Unit 2 refueling outage identified implementation problems in the new design change process. Poor implementation resulted in numerous comments generated during QA review of DCPs, rejection of some DCPs by SORC, and concerns identified in NRC inspections regarding outage DCPs. Problems included inadequate or incomplete safety evaluations, inconsistencies between checklists, and missing review and approval signatures. The licensee's handling of safety evaluations (10 CFR 50.59 reviews) exhibited a lack of preciseness and attention to detail. Design analyses for potential consequences of system or component failures were also noted to exhibit weaknesses. For example, during the Unit 2 outage team inspection, NRC identified that the design change which moved the low power trip bypass setpoint (P-9) from 10% to 50% power failed to examine potential consequences of system or component failures.

During the transition, the problems noted above were largely the result of confusion due to the dual systems of design control (old procedure and new procedure) and a lack of training and experience in the new system. A majority of modifications and other design changes had been processed through the old procedures, but were being implemented under the new system. Also, the requirements of new procedures were not very well disseminated to affected personnel. Although these problems may be attributed to growing pains, the number of problems identified and the lack of prompt action by management to identify and resolve the root cause of these problems was of concern. Subsequently, enhanced training was provided to engineering personnel regarding the new design change procedures, and the importance of attention to detail. A pre-SORC review of completed DCPs by a board composed of engineering managers was also instituted. The improved quality of Unit 1 refueling outage DCPs reviewed at the end of the SALP period indicated that these corrective actions were effective.

The Engineering and Plant Betterment (E&PB) staffing was generally adequate. The plant staff managed approximately 65% of the present workload, and contractor personnel were used for the balance of the work. The staff was competent and knowledgeable in their areas of responsibility. The licensee strongly supported participation in industry, owners' groups, and professional societies in order to evaluate and develop program enhancements. In addition, licensee initiatives in performing safety system functional reviews and reconstitution of the design basis documentation indicated a commitment to self improvement in these areas.

Various meetings provide adequate communications for management control of the many projects and tasks in E&PB. Individual communications between project team members and the Project Managers appeared satisfactory for accomplishing the major projects. However, equipment failures (vital inverters) and system design problems (reactor protection system and feedwater regulating valves) have contributed to reactor trips. Modifications and upgrades for these problems which were in progress during the assessment period were in some cases not implemented in time to prevent recurrent trips.

The strong support provided by the on-site system engineers in support of day-to-day activities was noted during the last SALP period. Aggressive involvement and technical guidance with respect to troubleshooting and resolution of identified problems by the systems engineers was also noted during this SALP period. Examples include; the development of a comprehensive test procedure to verify operability of the diesel generator that had been synchronized out-of-phase with the grid, providing conservative technical guidance to operators regarding a reactor coolant pump seal leak, investigation of various MSIV discrepancies, and prompt identification and resolution of a transformer combustible gas problem. A noted exception, however, is the steam generator steam flow indication discrepancies, a long-standing issue that has not received adequate management or engineering attention.

The continued effective interface between reactor engineering and the operations staff was evident during startup testing from refueling. The control room operators were kept informed by the reactor engineer as to the intent, direction, and the overall status of the ongoing tests. The Nuclear Fuels Group of the E&PB organization provided strong support throughout the testing by providing personnel and analytical test criteria.

The licensee's program to control the performance of inservice inspection (ISI) in accordance with ASME Section XI is a strength, in that; program changes are documented after review and approval by appropriate personnel, and plant modifications are reviewed for ISI program requirements. The appropriate level of management is involved in the evaluation and resolution of examination results.

In summary, the engineering support organization, design change control, and communications between plant and corporate engineering have improved. System engineering continued to be a noteworthy strength. However, there were implementation problems with inconsistent or missing information in DCPs and inadequate safety evaluations during this SALP period. These problems were evaluated by the licensee and are in the process of resolution. These licensee initiatives appear to be well directed and capable of enhancing engineering support to the plant.

IV.F.2 Performance Rating

Category 2; Improving

IV.F.3 Recommendations

None

IV.G Safety Assessment/Quality Verification (155 hours, 4%)

IV.G.1 Analysis

This new functional area combines the previous functional areas of Licensing Activities and Assurance of Quality. This area assesses the effectiveness of the licensee's programs provided to assure the safety and quality of plant operations and activities.

During the previous SALP period, the licensee was evaluated as Category 2 in Licensing. The SALP noted a weakness in schedular planning which resulted in late submittals and responses. Licensing staff technical capability and the thorough and effective manner in which the licensee responded to safety issues were noted as strengths in the licensing area. The licensee was evaluated as Category 1 in the Assurance of Quality functional area during the previous SALP period. In general, licensee initiatives and programs to assure quality were comprehensive and effective. However, the SALP concluded that improvements in chemistry laboratory QA/QC and the quality of licensee engineering processes were needed.

During this assessment period, the licensee generally approached technical issues from a safety perspective and were responsive to NRC initiatives. However, delays in licensee recognition of the impact of planned activities such as the CRDM clamp installation and steam generator tube plugging on regulatory requirements resulted in untimely submittals. More than occasional expedited NRC review and approval was needed. Licensee responsiveness to requests for information such as TMI Action Plan status was very good.

Thirty-eight licensing actions were processed during this assessment period. In addition, considerable effort was made by the licensee to reduce the backlog of pending license amendment requests. Although staffing levels appear adequate, the quality of new licensee submittals was inconsistent, both from an administrative and technical perspective. For example, Appendix R exemption requests and the CRDM clamp submittal were comprehensive and technically adequate, while others required communication with the licensee to resolve questions and concerns that were not addressed adequately in the submittals. For example, one amendment request was rejected because the content deviated significantly from NRC published guidance and adequate justification for the deviations was not provided. Numerous inaccuracies in proposed Technical Specification revision submittals were observed and corrected. The licensee was cooperative and very responsive in resolving each of the administrative and technical concerns. At the end of the assessment period, improvement in the quality of some new licensee submittals was noted. Continued management attention is required to assure sustained improvement in the technical and administrative quality, as well as the timeliness of submittals.

The presence of Corporate VPs and the station general manager on site was observable. They were generally involved in site activities. The station staff was experienced and adequately trained. However, assessments in operations, surveillance and radiological controls indicated that management did not hold the work force accountable for the expected level of performance and that some programs were not effectively implemented.

Management's recognition and acceptance of these problems later in the assessment period led to the development and implementation of programs to communicate management expectations; review and correct programs, procedures and policies; and improve personnel performance. These programs included a Technical Specification surveillance verification project, work practices improvement program, procedures upgrade program, safety system functional reviews, and a third party assessment of the 10 CFR 50.59 safety evaluation process. In addition, the station QA group instituted a performance-based surveillance program including backshift activities which provided station management with a method to evaluate the effectiveness of program implementation. During the development and implementation of those initiatives, recurrent examples of inattention to detail, procedure noncompliance and deficient work practices were exhibited, and indicated a continuing need for management attention and action in assuring quality performance.

There were inconsistencies in the level of station management attention and control relative to planning and implementation of corrective actions in response to plant events or problems. Examples of well controlled and executed activities accomplished during the assessment period include the station's investigation of the service water bay flooding event and the containment spray piping replacement. In contrast, activities associated with the auxiliary building ventilation charcoal replacement and testing; and steam generator steam flow indication discrepancies exhibited a reduced level of management attention, control and effectiveness.

Station Operations Review Committee (SORC) reviews of reactor trips, plant events, and engineering design change packages were generally thorough and usually displayed an acceptable level of understanding of technical issues. However, on several occasions the SORC and station management authorized unit restart based on the replacement of suspect components or the completion of actions based on supposed problems without substantive evidence that all possible causes had been identified or would be resolved. Onsite Safety Review Group (SRG) post-trip reviews and other investigations of these and other instances were of high quality and made good findings and recommendations. Station responsiveness to these findings was not particularly effective early in the SALP period, but was observed to be improving later. The onsite safety review group also performed safety system functional reviews, problem area reviews, and root cause investigations which provided thorough and meaningful information for management action. In addition, the licensee has instituted a Human Performance Evaluation System to enhance root cause analysis of personnel errors. Continued management focus on root cause determinations is needed.

Quality Assurance department audits and surveillances were of sufficient depth to make meaningful evaluations of the activities audited. The quality of the offsite safety review group's unresolved safety question reviews was acceptable. The lack of timeliness in responding to and resolving QA and safety review groups' findings and recommendations by the station was a continuing concern. In addition, a violation was issued for the failure to correct or prevent recurrence of QA identified material control nonconformances. In general, Corporate and station management enhanced the attention and importance given to the resolution of action items, and some improvement was noted toward the end of the SALP period.

Licensee responsiveness to previously identified weaknesses in the chemistry laboratory QA/QC program resulted in the implementation of improved calibration techniques and procedures, and an overall satisfactory level of performance in this area during this SALP period.

In summary, licensee management generally displayed an adequate safety perspective. Continued management attention is needed to assure consistency in the quality and timeliness of license submittals. A need for improved quality performance and personnel accountability was recognized by licensee management during the assessment period. Enhanced management communication and corrective action programs have been developed and were in various stages of implementation at the end of the assessment period. Some improvements were noted as a result of management efforts. However, completion of the improvement programs and continued management oversight of program implementation is necessary to resolve the deficiencies in quality.

IV.G.2 Performance Rating

Category 2

IV.G.3 Recommendations

None

SUPPORTING DATA AND SUMMARY

A. Enforcement Activity

Functional Area	Number of Violations by Severity Level V	IV	III	II	I
Plant Operations		5*			
Radiological Controls		4			
Maintenance/Surveillance		1*			
Emergency Preparedness					
Security					
Engineering/Technical Support		1			
Safety Assessment/Quality Verification	1				
Totals	1	10			

*Violation cited three examples, two were in operations and one in maintenance/surveillance functional areas.

An enforcement conference was held with the licensee on September 29, 1988 to discuss environmental qualification violations. A civil penalty resulted from the violations.

B. Inspection Hour Summary

	Actual	Annualized Hours	Percent
Plant Operations	1437	958	41
Radiological Controls	503	335	14
Maintenance/Surveillance	648	432	18
Emergency Preparedness	305	203	9
Security	209	139	6
Engineering/Technical Support	274	183	8
Safety Assessment/Quality Verification	155	103	4
Totals	3531	2353	100%

**Does not include NRC licensing staff hours.

C. Licensee Event Report Causal Analysis

Functional Area	A	B	C	D	E	X	Total
Operations	16			4	8	4	32
Radiological Controls	4	1		1	6		12
Maintenance/Surveillance	5			6	1	1	13
Emergency Preparedness							
Security	3						3
Engineering/Technical Support	2	6		1	3	1	13
Safety Assessment/Quality Verification							
Totals	30	7	0	12	18	6	73

Includes Unit 1 LERs 88-01 through 88-20 and 89-01 through 89-15 and Unit 2 LERs 88-01 through 88-26 and 89-01 through 89-09, and security events 88-01 through 88-03

Cause Codes*

Type of Events

A.	Personnel Error.	30
B.	Design/Man/Constr./Install	7
C.	External Cause	0
D.	Defective Procedure.	12
E.	Component Failure.	18
X.	Other.	6
	Total.	73

*Root causes assessed by the SALP Board may differ from those listed in the LER.

The following common mode events were identified:

Sixteen LERs discussed reactor trips, twelve discussed missed or late surveillance tests, ten reported TS 3.0.3 entries for inoperable equipment (5 service water related, 3 steam flow channel inoperable, 1 resulted in shutdown), nine discussed missed TS action statement requirements (4 chemistry samples, 5 firewatch), eight reported radiation monitoring system equipment related problems and six discussed system design related deficiencies.

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. Special areas may be added to highlight significant observations.

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

1. Assurance of quality, including management involvement and control;

2. Approach to resolution of technical issues from a safety standpoint;

3. Responsiveness to NRC initiatives;

4. Enforcement history;

5. Operational and construction events (including response to, analyses of, reporting of, and corrective actions for);

6. Staffing (including management); and

7. Effectiveness of training and qualification program.

On the basis of the NRC assessment, each functional area evaluated is rated according to three performance categories. The definitions of these performance categories are:

Category 1: Licensee management attention and involvement are 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 safety 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 are being achieved. NRC attention should 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, represents 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.

It should be also noted that the industry continues to be subject to rising performance expectations. NRC expects each licensee to actively use industry-wide and plant-specific operating experience in order to effect performance improvement. Thus, a licensee's safety performance would be expected to show improvement over the years in order to maintain consistent SALP ratings.