ENCLOSURE

SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-354/86-99

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

HOPE CREEK GENERATING STATION

ASSESSMENT PERIOD: DECEMBER 1, 1986 - JANUARY 15, 1988

MARCH 4, 1988

TABLE OF CONTENTS

I. INTRODUCTION

A. Purpose and Overview

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

An NRC SALP Board, composed of the staff members listed in Section B below, met on March 4, 1988 to review the collection of performance observations and data in order to assess the licensee's performance at the Hope Creek Generating Station. This assessment was conducted in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance". A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee's safety performance at the Hope Creek Generating Station for the period December 1, 1986 through January 15, 1988. The summary findings and totals reflect a thirteen month assessment period.

B. SALP Board Members

Chairman

W. F. Kane, Director, Division of Reactor Projects

Members

E. C. Wenzinger, Sr., Chief, Reactor Projects Branch 2 (DRP)
R. R. Bellamy, Chief, Facilities Radiological Safety and Safeguards Branch (DRSS) (part time)
W. V. Johnston, Director, Division of Reactor Safety (part time)
S. J. Collins, Deputy Director, Division of Reactor Projects (DRP) (part time)
J. P. Durr, Chief, Engineering Branch (DRS) (part time)
R. M. Gallo, Chief, Operations Branch (DRS)
P. D. Swetland, Chief, Reactor Projects Section 2B (DRP)
G. W. Rivenbark, Project Manager, PDI-2 (NRR)
R. W. Borchardt, Senior Resident Inspector, Hope Creek (DRP)

Other Attendees

J. E. Richardson, Acting Deputy Director (DRS) (part time)
D. K. Allsopp, Resident Inspector, Hope Creek (DRP)
M. M. Shanbaky, Chief, Facilities Radiation Protection Section (DRSS) (part time)
W. J. Pasciak, Chief, Effluents Radiation Protection Section (DRSS) (part time)
R. L. Nimitz, Senior Radiation Specialist (DRSS) (part time)
G. W. Meyer, Project Engineer, Branch 2 (DRP)

II. CRITERIA

Licensee performance was assessed in selected functional areas significant to nuclear safety at operating facilities.

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

1. Management involvement in assuring quality.

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

3. Responsiveness to NRC initiatives.

4. Enforcement history.

5. Operational events (including response to, analysis of, and corrective actions for).

6. Staffing (including management).

7. Training effectiveness and qualification.

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. The definitions of these performance categories are:

Category 1. Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used so that a high level of performance with respect to operational safety is being achieved.

Category 2. NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and reasonably effective so that satisfactory performance with respect to operational safety is being achieved.

Category 3. Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used so that minimally satisfactory performance with respect to operational safety is being achieved.

Trend. The SALP Board may determine to include an appraisal of the performance trend of a functional area. Normally, this performance trend will only be used when both a definite trend of performance is discernible to the Board and the Board believes that continuation of the trend will result in a change of performance level.

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.

III. SUMMARY OF RESULTS

A. Overall Summary

Operation of the Hope Creek facility continues to be characterized by a conservative and safety conscious attitude. During previous years, a solid foundation of programs, procedures, and qualified personnel had been established and although further improvements are needed in specific areas, the overall program has been effectively implemented. As the Hope Creek organization has matured, overall performance has improved.

Considerable resources have been expended during this and the previous period on plant features and enhancements that demonstrate a commitment to operational safety and the radiation protection principles of As Low as Reasonably Achievable (ALARA). These enhancements include a semi-automatic control rod drive (CRD) removal system, CRD rebuild facility improvements, zinc passivation, robotics program, hydrogen addition and a plant painting program. A similar level of commitment is evident in the emergency preparedness, training, and security areas.

Licensed operator performance remains a strength. While non-licensed operator performance is generally adequate, improvements are needed in the area of attention to detail to prevent additional control of plant equipment problems. Management attention is needed to assure adequate shift manning in the future without the need for excessive overtime.

The radiation protection and chemistry program are effective and well coordinated. The coordination between radiation protection and all other departments has resulted in the incorporation of good ALARA principles on a daily basis. Excellent high radiation area and contaminated area controls are in place. Areas in need of improvement include audits and the review of radiological incidents.

The maintenance and surveillance programs utilize high quality procedures and are well controlled. Staffing levels are adequate and the continued reduction in the reliance upon contractors throughout the plant is a positive trend. An increased attention to detail is necessary to prevent missed surveillance tests and component operability and procedure compliance problems.

Station management, quality assurance, supervision, and the onsite safety review group all contribute toward promoting quality on a daily basis. Each maintains a high level of visibility in the plant. QA and OSR have been aggressive in implementing new iritiatives.

A strong management team and a positive worker attitude have placed Hope Creek on a generally positive performance trend. However, recurring problems with procedural compliance and attention to detail require prompt and effective corrective action. The first refueling outage, senior management changes, and the Engineering Department reorganization will provide significant challenges during the next assessment period.

B. Background

1. Licensee Activities

The licensee entered the evaluation period with the plant in cold shutdown. On December 4, 1986, the reactor was taken critical for continuation of the power ascension test program, and on December 6 the load reject scram test was completed.

The reactor was taken critical on December 10, 1986, and the turbine generator synchronized to the grid on December 12. The Hope Creek facility officially entered commercial operations on December 20, 1986. The unit remained at full power until February 11, 1987, when the licensee commenced a reactor shutdown and declared an unusual event due to a drywell unidentified leak rate in excess of the 5.0 gpm technical specification limit. A drywell inspection found that the leak was coming from a recirculation pump discharge valve. The crack was located in the heat affected zone of the drain line to valve body weld and had been vibration induced. The licensee completed repairs and the reactor was taken critical and brought to full power on February 14.

On February 24, 1987, the plant inadvertently scrammed from 100% power during the conduct of an I&C surveillance test of the main turbine and feed pump turbine high water level trip circuitry. An I&C technician personnel error caused a main turbine trip on a high water level signal which in turn caused the reactor scram.

The reactor was taken critical on February 28 and the generator synchronized to the grid on March 1. Two minutes after synchronization, an empty oil tanker transiting the Delaware River collided with and damaged a tower supporting the 500 KV Keeney transmission line to Hope Creek. The Keeney line snapped and two isolation breakers in the Hope Creek switchyard opened isolating the line. To maintain the grid stability, Hope Creek and both Salem units were required to be operated at a reduced electric output. The Hope Creek unit continued to operate at the maximum allowable power for these conditions.

On April 6, 1987, Steven Miltenberger was appointed to the position of Vice President - Nuclear Operations and Corbin McNeill promoted to Senior Vice President - Nuclear.

On April 29, 1987, the licensee shifted guard force contractors from YOH to Wackenhut.

On May 18, 1987, Stanley LaBruna relieved Roger Salvesen as the Hope Creek General Manager.

On July 30, 1987, the reactor automatically scrammed due to a reactor vessel low water level condition. The low water level condition was caused by a temporary loss of power to the feedwater control logic normally energized by a miscellaneous instrumentation power supply. The loss of power occurred when an equipment operator made an error while switching power supplies to the inverter in preparing for preventative maintenance on the inverter.

The reactor was taken critical on July 31, 1987.

On August 16, 1987, the licensee declared and terminated an unusual event for a reactor scram with HPCI injection. The trip occurred when operators were attempting to return a reactor feedpump turbine (RFPT) to service after corrective maintenance and inadvertently blew a RFPT rupture disc. After the disc blew out, condenser vacuum quickly dropped and tripped the two operating RFPTs. Reactor vessel level decreased until the scram occurred at level 3. The licensee took the reactor critical on August 17 and synchronized with the grid the same day.

The unit remained at essentially full power until August 29, when the reactor scrammed during performance of a weekly surveillance test on the main turbine combined intermediate valves (CIVs). While cycling the No. 5 CIV, a pressure transient in the electro-hydraulic control (EHC) system resulted in a turbine control valve fast closure and a main stop valve closure which initiated the scram signal. The reactor was taken critical later the same day.

On September 18, 1987, the reactor was manually scrammed from approximately 20% power and a 20 day surveillance test outage was commenced. In addition to surveillance tests, other outage work included recirculation system instrument line repairs and safety relief valve acoustic monitor accelerometer replacement.

On October 10, 1987, the reactor was taken critical marking the end of the surveillance testing outage. The retest for replacement of the acoustic monitors included performing safety relief valve (SRV) lift tests at approximately 750 psig. Eight SRVs were cycled without incident, however the "J" SRV stuck open during testing. After it was determined that the valve could not be shut, the reactor was manually scrammed. The plant was placed in cold shutdown and the defective SRV was replaced. The reactor was taken critical on October 12, 1987.

On October 13, 1987, an explosion and fire occurred in a main transformer which resulted in a main turbine generator trip. Because the reactor was operating at 20% power, no reactor scram occurred nor were any ESF systems actuated. The licensee's fire department responded and the automatic water deluge system initiated. No personnel injuries occurred as a result of the incident. The licensee shut down the reactor during the main transformer replacement and entered cold shutdown. Following the 13-day transformer replacement outage, the reactor was taken critical on October 26, 1987.

December 8, 1987, the reactor scrammed from 100% power. The scram was caused by a reactor protection system (RPS) channel B 1/2 scram signal generated by surveillance testing combined with an RPS channel A 1/2 scram signal caused by a spurious spike of main steam line (MSL) radiation monitor. The reactor was taken critical on December 9, 1987 and the unit remained at full power until the end of this assessment period.

2. Inspection Activities

Two NRC resident inspectors were assigned to the site throughout the assessment period. During this thirteen month assessment period, 3357 hours of direct inspection were performed, which equate to 2955 hours on an annual basis.

Tabulations of inspection activities and associated enforcement actions are contained in Tables 1, 2 and 3. The percentage of total inspection time devoted to a functional area, tabulated in Table 2, is included at the heading of each area analyzed in Section IV.

This assessment report also discusses "Training and Qualification Effectiveness" and "Assurance of Quality" as separate functional areas. Although these topics are assessed in the other functional areas, through their use as evaluation criteria, a synopsis of these two areas is provided. Quality assurance

effectiveness has been assessed on a day-to-day basis by resident inspectors and as an integral aspect of specialist inspections. Although quality work is the responsibility of every employee, one of the management tools to measure this effectiveness is reliance on quality assurance inspections and audits. Other major factors that influence quality, such as involvement of first-line supervision, safety committees, and worker attitudes, are discussed in each area. Due to limited inspection activities in the fire protection area, it is not included as a separate functional area in this report. Inspection activity that was performed in the area of fire protection and housekeeping is included in the Plant Operations functional area.

C. Facility Performance Analysis Summary

Functional Area		Category Last Period (11/1/85-11/30/86)	Category This Period (12/1/86-1/15/88)	Recent Trend
A.	Plant Operations	2	2	
B.	Radiological Controls and Chemistry	2	2	Improving
C.	Maintenance and Outage Management	1	1	
D.	Surveillance	2	2	
E.	Emergency Preparedness	1	1	
F.	Security and Safeguards	1	1	
G.	Engineering Support	No Rating	2	
H.	Licensing Activities	1	2	
I.	Assurance of Quality	2	2	Improving
J.	Training and Qualification Effectiveness	2	1	

D. Unplanned Shutdowns, Scrams, and Forced Outages

Date & Power Level	Description	Cause	Functional Area
11/87 - 100%	Controlled shutdown/forced outage; crack on 3/4 inch recirculation system pipe due to vibration induced fatigue failure	Component failure/ design inadequacy	Engineering (Construction)
2/24/87 - 100%	Automatic scram caused by a spurious high water level main turbine trip signal generated during surveillance testing	Personnel error/attention to detail	Surveillance (I&C)
7/30/87 - 100%	Automatic scram; incorrect operation of an inverter	Personnel error, non licensed operator/ attention to detail	Operations
8/16/87 - 85%	Automatic scram; Reactor feedpump turbine diaphragm rupture resulted in loss of feed, lack of procedure compliance contributed to diaphragm failure	Component failure/ personnel error; operator	Operations
8/29/87 - 85%	Automatic scram; Turbine control valve fast closure during surveillance testing	Component transient (exact cause unknown); no recurrence	------
10/10/87 - 10%	Manual scram; Safety relief valve stuck open during startup test	Component failure/ random	------
10/13/87 - 20%	Controlled shutdown; Main transformer fire	Component failure/ cause unknown	------

D. Unplanned Shutdowns, Scrams, and Forced Outages (Cont.)

Date & Power Level	Description	Cause	Functional Area
12/8/87 - 100%	Automatic scram; Spurious main steam line radiation trip combined with a 1/2 scram due to surveillance testing	Component failure/ random	------

Note: The root cause in this Table is the opinion of the SALP Board based on the inspector(s) description of the event; and may, in certain instances, differ from the LER.

IV. Performance Analysis

A. Plant Operations (39%, 1325 hours)

1. Analysis

Plant operations was rated as category 2 during the previous assessment period. It was concluded that the proper perspective on safety had been established throughout the plant staff and procedures. Control room operator performance was recognized as a noteworthy strength. Areas of weakness identified included an excessive number of control room overhead annunciators in alarm, inconsistency in the maintenance of control room logs, occasional breakdowns in communications between departments, and a need to improve administrative efficiency. The licensee has taken steps to address each of these weaknesses and as discussed in the following assessment, significant improvements have resulted.

Plant operations have continued to be conducted in a conservative and safety conscious manner. A high level of management attention is evident on a daily basis and the performance of control room operators, in particular, remain a noteworthy strength.

All aspects of plant operations are well controlled and coordinated. The station's general manager and all department heads receive a briefing of plant conditions and problems each morning from the nuclear senior shift supervisor (NSSS). This is followed by a meeting of all work group supervisors and the NSSS to discuss planned work activities and possible conflicts. Finally, a daily management meeting establishes priorities and a 7 day general schedule. All work activities are scheduled by the planning department based upon the priorities established by management and input from the work group supervisors. This system has proven to be effective in ensuring good inter-department communication and an effective approach to resolving problems. The NSSS exercises final authorization for all plant activities in order to ensure required system operability is not adversely affected. To obtain a more direct operation's perspective in the recent surveillance test outage, the operations engineer functioned as the outage manager and the NSSS was utilized as the outage shift manager.

Strong management attention to resolving deficiencies identified during the startup testing program was observed during the assessment period. This is evidenced by the very few (10) results deficiencies remaining open at the conclusion of the startup program. This is in sharp contrast with the large number of outstanding items at the conclusion of the preoperational phase. The overall closeout process was well documented

and plans and responsibilities for resolving the few remaining outstanding items were well formulated and technically sound.

Licensed operator plant awareness, attention to detail and a professional control room atmosphere have all resulted in there being no control room operator induced reactor scrams or significant transients. In fact, these same attributes contributed toward the operators' ability to minimize the severity of equipment induced transients such as a failure of feed system minimum flow valve control and severe feed pump turbine oscillations. It is possible that both of these transients would have resulted in reactor scrams had the operator responses not been timely and correct. One instance of a failure to fully complete an abnormal procedure was noted during this assessment period.

There have been several incidents which indicate lapses in attention to detail by licensed operators. These include an inadvertent lifting of a safety relief valve by an operator and two occasions (once extending through shift turnover) when unauthorized running equipment was not detected in a timely manner. The operators failed to recognize an alarm on a new radiation monitoring system for 43 hours which resulted in a violation of technical specifications. The safety significance of these examples were minor but point out a need to emphasize attention to detail.

The performance of non-licensed equipment operators, while generally very good, has resulted in one reactor scram and a number of equipment availability problems. An equipment operator's personnel error in the transferring of power supplies to an instrument inverter resulted in the loss of feedwater control and a reactor scram. In addition to this isolated event are the personnel errors which resulted in mispositioned valves and equipment switches. Systems adversely affected by these errors included an emergency diesel generator air start compressor, High Pressure Cooling Injection System (HPCI) room coolers, and portions of the Automatic Depressurization System logic. Operations' improper system restoration after maintenance on the reactor water cleanup (RWCU) pumps, resulted in a RWCU isolation and a subsequent failure of the pump mechanical seal. A number of spills occurred this period which indicate the need for operations personnel to exhibit additional vigilance in reviewing valve line-ups to preclude radiological incidents. For example, drain lines were left open on a reactor water clean-up pump resulting in blowdown of airborne radioactivity in the reactor building and limited intakes of radioactive material by personnel. Also, the wrong reactor water clean-up heat exchanger was drained resulting in

the introduction of water into the work area.

An enforcement conference was held on October 19, 1987 to discuss the licensee's corrective actions relating to their control of plant equipment alignment problems. Corrective actions initiated included completion of the instrument intermediate valve numbering and locking program, positioning of station aids on critical plant equipment, and creation of an incident and trip reduction task team. Significant effort was also made to improve individuals' alertness and need for attention to detail. Based upon recent performance, these corrective actions have been effective.

The operations department currently has an ample number of both licensed and non licensed operators to meet staffing requirements and man a 5 shift rotation with a moderate use of overtime. However, based upon projected normal attrition rates and the limited number of people in the license training program, the area of operator staffing will require strong management attention in the near future. The control room is consistently maintained in a professional manner with very good access and noise control. Noise control is especially aided by the plant page system design which prevents routine pages from being heard in the control room and by the addition of carpeting which has reduced background noise levels. The control room environment is also aided by the use of a work control group that processes all work orders, surveillance tests, and blocking permits outside of the control room with the exception of final approvals. A number of licensed operators have been permanently transferred to other departments such as technical and planning while 2 others were on temporary assignment to training and emergency preparedness. These assignments have been effective in providing an operational awareness throughout the plant organization.

The station operations review committee (SORC) and the onsite safety review (OSR) group has done a noteworthy job in the review of plant significant events, safety evaluations, and system inspections. Their recommendations are generally well thought out and technically correct. During this assessment period, OSR conducted a Safety System Functional Review which was similar to an NRC Safety System Functional Inspection (SSFI). Future reviews of this type are planned by the licensee.

The licensee has made a number of administrative improvements, including implementation of an equipment malfunction identification system (EMIS) that eliminates duplicate work orders and provides an accurate tracking system. These enhancements combined with a more moderate activity level have reduced the

administrative back logs noted in the previous SALP. The quality and consistency of control room logs has also improved. Little or no progress was made during the first half of the assessment period toward reducing the number of control room overhead annunciators in alarm. However since June 1987, the number of alarms was reduced from approximately 45 to 20 (out of a total population of 454). Continuation of this effort is necessary.

Housekeeping, while generally adequate, has at times left room for improvement. Occasionally, improperly erected or stored scaffolding, evidence of eating and smoking in the radiological controlled area, and unsecured gas bottles can be found in the plant. At times, there appears to be a lack of aggressive monitoring of fire door operability and fire extinguisher operability checks. Once identified, these discrepancies are quickly corrected.

In conclusion, Hope Creek continues to display a conservative and safety conscious attitude toward all aspects of operations. Licensed operator performance continues to be very good with the exception of limited number of isolated errors. Non-licensed operator performance while generally adequate has more frequently shown the need for improvement in the area of attention to detail and overall plant knowledge. SORC and the safety review groups continue to be effective.

2. Conclusion

Rating: 2

Trend: None

3. Board Recommendations

Licensee

Evaluate future licensed operator manning requirements to ensure adequate staffing levels are maintained.

NRC None

B. Chemistry and Radiological Controls (20%, 598 Hours)

1. Analysis

Performance in the area of Radiological Controls and Chemistry was evaluated as Category 2 the previous assessment period. Weaknesses were identified in the areas of supervisory oversight of program implementation, training and qualification of personnel, post accident sampling and water chemistry control. The licensee took timely action to correct these weaknesses.

Radiation Protection

The licensee is maintaining and implementing an effective, well coordinated Radiation Protection Program. The licensee filled previously vacant positions with qualified personnel. The organization and staffing level is adequate to support routine and outage operations. Well qualified contractor personnel were obtained to augment the staff during the surveillance outage. Communications and working relationships with other station departments (e.g. operations) is good. The licensee actively seeks out and implements appropriate lessons learned from the industry.

The Radiation Protection Program program is described by well defined well written procedures. Procedure quality is very good. A particularly strong area is the program for access to temporary and unusually high radiation areas. Access to each area is controlled by special procedures. An effort is currently underway to standardize the procedure program such that Salem and Hope Creek will have common procedures. This will allow for a large pool of qualified staff with the capability of working at both sites.

The radiation protection personnel training program is well described and implemented. Some technician training records were fragmented and not easily retrievable resulting in supervisor difficulties in assuring that personnel were qualified for a given task. The licensee took immediate corrective action for this matter. Properly trained and qualified personnel were overseeing ongoing work. The general employee training program is INPO certified. The licensee making good progress towards INPO accrediting the Radiation Protection Personnel Training Program.

The external exposure control program is well defined and with some minor exceptions effectively implemented. These minor exceptions involved several instances of personnel not reading and signing revised RWPs and personnel not posting RWPs at work locations. These were quickly corrected by the licensee. Posting, barricading and locking of radiological controlled areas was effective. Radiation surveys to support pre-planning and on-going work were comprehensive. With the exception of the minor weaknesses discussed above, the overall external control program is strong.

The licensee maintains and implements a generally effective internal exposure control program. Engineering controls are effectively used to maintain airborne radioactivity levels well below those requiring respiratory protection.

The licensee has established and is implementing a defined ALARA Program. Overall performance in maintaining occupational exposure to as low as reasonably achievable is good. New initiatives (e.g. Zinc passivation, and control rod drive removal equipment enhancements) to reduce occupational exposure over the life of the plant are being implemented. Plant and corporate management maintains an active interest in ensuring radiological work activities are conducted in a manner to minimize occupational exposure. However, some areas for enhancement are the ALARA goals program and the program for performing ALARA reviews of work in-progress, to ensure it is conducted in accordance with initial ALARA plans. Some goals were not challenging and the criteria for reviewing work in-progress was not well defined. The licensee has initiated corrective actions to improve performance in these areas. In spite of these weakresses, the overall program is effective.

The station exposure total for 1987 is 129 person-rem (as of December 15, 1987). This exposure compares favorably with other similar vintage plants when one considers the work load and self-initiated work to reduce exposure over the life of the plant.

Observations last assessment period identified some weaknesses in the Radiation Protection QA Audit Program, the QC Surveillance Program and the Corporate Radiological Controls Assessment Programs. The audits, surveillances, and assessments were principally paper, not performance oriented and of marginal quality. The licensee took aggressive corrective action to improve the quality of audits, surveillances, and assessments. One area for additional enhancement was identified involving the Radiological Occurence Report System. The System did not provide for effective oversight and trending of radiological occurrences. The licensee is currently modifying the System to provide for real-time computer tracking and trending of occurrences. The licensee has been very responsive to NRC identified weaknesses in this area. All weaknesses identified are being corrected.

The licensee corrective actions on previously identified NUREG 0737 post accident sampling and analysis weaknesses were found to be technically sound and timely. Licensee verification of post accident effluent monitor calibration was commendable.

Effluent Monitoring and Control

The licensee has implemented a sound program for effluent monitoring and control, although several continuing problems similar to those identified during the previous period were noted. The most significant of these problems involved inoperable effluent control equipment, procedural problems relating to liquid scintillation counting, and inadequate followup of RETS/ODCM changes. Good response to identified concerns occurred once licensee attention was focused in this area. The licensee improved administrative controls of operability, provided status boards to assure alternate sampling and provided additional training for responsible individuals. These corrective actions reduced the number of event reports caused by inoperable effluent monitors as the assessment period progressed.

Radioactive Waste Shipping

The preparation, packaging and shipping program for solid waste was generally effective. Early in the assessment period problems were noted caused by ineffective interface between the solid radwaste groups at Salem and Hope Creek. Although NRC reviews during the previous assessment period had clearly directed licensee attention to the need for effective interface and communication, delineation of roles and responsibilities, and establishment of technical data transfers, these remained vaguely defined between the two stations resulting in failure to meet radwaste generator and shipping documentation requirements. Although the licensee established an interface document to clearly define the roles, responsibilities and technical data communication between the stations, this action followed NRC enforcement action raising a concern for effective preventive actions in response to earlier NRC identified problems.

Radiological and Non-radiological Chemistry

A special review of the chemistry department (radiological and non-radiological areas) was conducted early in the assessment period in response to an allegation of the use of unqualified personnel in chemistry operations. The inspection found the staff to meet or exceed required qualifications. Technician training and qualification programs were acceptable, complete and met requirements. One violation involving failure to follow an administrative procedure was identified but corrected prior to the inspector leaving the site.

Late in the assessment period a routine inspection was done of the licensee's radiological chemistry program. The inspection found that the licensee was implementing an effective radioactivity measurements program. Licensee and NRC measurements of split radioactivity samples were in agreement. Procedures and staffing were adequate. The licensee was placing less reliance on contractors as the staff became more experienced. Substantial improvements were made in this area from the last assessment period.

Routine review of the non-radiological chemical measurements program early in the period found the program to be unreliable due to failure to implement a measurement control program, use of uncalibrated pipets, use of one point instrument calibrations and single stock solutions for both calibration and control. Although disagreements with NRC non-radiological standards were low, many of the agreements were due to larger than customary uncertainties in the licensee's measurements. The licensee stated during the inspection that they would respond to the problems identified.

In summary, the licensee is implementing an effective radiation protection program. ALARA planning to reduce exposure was particularly strong as evidenced by numerous ALARA initiatives. Radiation protection personnel working relationships with other station departments is of high quality and noteworthy. However, additional improvement in the quality of audits appears warranted. The licensee provided adequate control of plant chemistry, liquid and gaseous effluents and solid radwaste during the assessment period. Lapses in management control of technical change, intra-site communications and process and laboratory measurements were noted indicating the need for programmatic improvements that had not been completed during the preoperational and startup periods of plant operations. Improvements were noted in these problem areas toward the end of the SALP period.

2. Conclusion

Rating: 2

Trend: Improving

3. Board Recommendations

Licensee None

NRC None

C. Maintenance and Outage Management (9%, 262 Hours)

1. Analysis

The maintenance area was evaluated as category 1 in the previous SALP. Although based upon a limited amount of review, the previous SALP concluded that a good foundation of procedures and programs had been established, and effective corrective actions were taken for earlier procedure compliance and operability determination problems.

Due to the limited scope of outage activities conducted during this period, an assessment of outage management is included in this functional area. Outages will be discussed in a separate functional area in future SALP reports.

Although not fully challenged during this assessment period, the maintenance department appears to be adequately staffed with experienced personnel. The reliance upon contractors in the instrument and controls (I&C) area has been reduced significantly. A job classification change has resulted in combining the electrical maintenance and I&C groups to form a controls group. It is anticipated that this reorganization will improve maintenance department accountability and responsiveness. There are approximately 46 personnel in the mechanical maintenance groups, all of whom are PSE&G employees. Fifty-five of the 70 control group personnel are permanent PSE&G employees. The maintenance department has been very responsive to plant problems and in responding to the needs of the operating staff. The number of outstanding safety related high priority work orders has been kept low (normally less than 10).

The scheduling and status of all corrective and preventative maintenance, and surveillance tests is coordinated by the managed maintenance information system (MMIS). Although some difficulty was experienced in making the transition to MMIS, this system appears to be an effective planning and scheduling tool. MMIS is an on-line computer based program that integrates the master equipment list, equipment history, recurring task scheduling, real time job status and parts inventory.

During this assessment period a 20 day planned outage was conducted. Although the major focus of this outage was surveillance testing, a number of corrective maintenance activities were also completed. The implementation of an outage management team proved to be effective in controlling and tracking the progress of outage activities. This team consisted of an outage manager (operations engineer) who had overall responsibility for outage activities, a shift manager

(senior shift supervisor) who provided outage management on a shift basis, department coordinators, area coordinators, and shift schedulers. To improve the outage process, the station utilized the operations engineer and shift supervisor to obtain a more direct operations perspective. One significant maintenance activity was the repair and modification to a number of recirculation system small line pipe cracks. Excellent coordination between the maintenance, radiation protection, and system engineering organizations enabled this job to be completed in a timely and effective manner. This repair was accomplished utilizing a special procedure which incorporated the use of freeze plugs and specially made mechanical plugs. This innovative repair method resulted in a significant reduction in man-rem exposure. Especially noteworthy was the planning and preparation which included the use of a full scale mock-up and video taped trial repair to validate and enhance the repair procedure. The actual repair effort was also video taped for ALARA considerations and future training.

Throughout the assessment period a number of maintenance activities were observed, including minor valve repairs, MOVATS testing, service water pipe replacement, reactor water cleanup pump seal replacement and numerous preventative maintenance activities. These activities were found to be generally well controlled and utilized well written procedures. One example of bypassing supervisor hold points was identified, however this is considered an isolated case.

The licensee has implemented an aggressive preventative maintenance program which includes both safety related and balance of plant equipment. The program utilizes predictive techniques such as vibration and oil analysis as well as standard maintenance methods. A planned system outage schedule is used for accomplishing preventative and corrective maintenance activities as well as surveillance tests.

During this SALP period there were 5 maintenance related LERs in which 3 involved personnel errors. No plant trips were caused by maintenance activities. A review of maintenance LERs did not reveal any programmatic or training deficiencies.

The planning organization has done an effective job in planning and coordinating daily and outage activities based upon management priorities. A forced outage schedule is established and continuously maintained, enabling all departments to know the majority of their work load as soon as the outage begins. With the exception of the main transformer outage, which took 12 days, the unit averaged less than 2 days per forced outage.

In summary, the maintenance program is adequately staffed with well trained and experienced personnel. Maintenance activities were well controlled and received an appropriate level of supervisory attention. The maintenance, planning and outage organizations were effective during planned and unplanned outages.

2. Conclusion

Rating: 1

Trend: None

3. Board Recommendations

Licensee None

NRC Maintain Normal Inspection Activity

D. Surveillance (10%, 288 Hours)

1. Analysis

The surveillance functional area was evaluated as a category 2 during the previous assessment period. Procedures and administrative controls were found to be adequate, however improvements were needed to reduce the number of missed non-routine surveillance tests and surveillance related reportable events.

Surveillance tests performed by the licensee are the responsibility of several departments, depending on the surveillance. The operations, maintenance, chemistry, and site protection departments each participate in surveillance testing with additional involvement from the planning department. This section addresses surveillance tests performed without reference to the particular department involved. Surveillance activities were routinely witnessed by NRC inspectors. The surveillance program is a well defined, computer based system that utilizes technically adequate procedures. The use of a computerized system for scheduling all periodic surveillance tests allows for efficient and generally effective management oversight of the approximately 5000 surveillance tests performed on an annual basis.

Of the 57 reportable events during this assessment period, 17 are associated with the performance of surveillance tests. Eight of these events were due to personnel errors, one of which resulted in a reactor scram. The personnel errors consisted mostly of equipment accessibility and test lead placement errors. One incomplete and one missed surveillance test were identified during the conduct of approximately 2100 operations department surveillance tests.

During this assessment period a transition was made from the inspection order (IO) system to a managed maintenance information system (MMIS) for the scheduling and tracking of surveillance tests. This transition contributed to 2 surveillance tests not being properly scheduled and subsequently not performed in the required time interval. The licensee promptly identified these oversights and the MMIS appears to be an effective management tool.

Although improved over the previous year's performance, further improvement appears to be needed in recognizing the need for, and accomplishing situational type tests and sample analyses. This is especially true in the radiation protection and chemistry areas where five failures to have required systems operable, compensatory samples analyzed, or surveillance tests completed were identified.

On occasion, breakdowns in the level of attention to detail and strict procedural compliance have been identified. On two separate occasions, unauthorized temporary modifications were installed in the plant due to inattention to the approved jumper control program. Also a filtration recirculation and ventilation system fan was made inoperable due to improper restoration and inadequate independent lineup verification following surveillance testing.

Throughout this assessment period the station technicians have recommended refinements to surveillance procedures. When these refinements are incorporated the procedure quality has been improved. However, at times the staff's lack of timeliness in incorporating the technician's recommended changes has led to complacency toward strict procedural compliance. For instance, a situation was identified where technicians ignored a logic tester indication that they reasonably believed was giving a faulty indication, and instead used a portable meter to verify contact status. While their actions where technically correct, no effort was made to correct or annotate the procedure. The number of recommended changes and the lack of a prioritization system for addressing them contributed to the lack of timeliness. Once identified, the licensee promptly resolved the technical concerns relating to the logic tester and also addressed the procedural issue.

The personnel performing surveillance tests are technically knowledgeable and deliberate in their actions. Based on inspector discussions with technicians and observation of activities; the training program, including on the job training, has been effective. Supervisory and site management involvement is evident on a day to day basis, as is excellent coordination between the control room operators and the technicians. The practice of limiting work to a specific logic channel on any given day has aided in more effective scheduling of surveillance tests and in preventing inadvertent actuations or transients.

In summary, the licensee has implemented an effective surveillance program that utilizes procedures of high quality. Personnel are well qualified and conscientious, however the importance of attention to detail needs to receive continued emphasis to reduce the number of personnel and missed surveillance errors.

2. Conclusion

   Rating: 2

   Trend: None

3. Board Recommendations

   Licensee None

   NRC None

E. Emergency Preparedness (13%, 377 Hours)

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 comprehensive evaluation of both facilities' emergency response capabilities.

During the previous assessment period, the licensee was rated Category 1 in the area of Emergency Preparedness at Hope Creek and Salem. This assessment was based on strong management commitment to the hardware and programmatic requirements of this functional area, and the performance of the licensee's staff during exercises at both Salem and Hope Creek.

During this assessment period there were three announced inspections of Emergency Preparedness at Artificial Island. One inspection was the observation of a Hope Creek full participation exercise. There was no exercise at Salem. In addition, four actual unusual events were declared at Hope Creek and one at Salem. Implementing procedures were correctly followed for all but one of the unusual events. On July 30, 1987, Hope Creek made a one hour notification to the NRC per 50.72(b) instead of declaring an unusual event. The licensee detected the error within sixteen minutes and then declared the unusual event. The Hope Creek Event Classification Guide has been modified to avoid a recurrence of this misclassification.

Observations made during the routine safety inspections at Hope Creek and Salem indicate regulatory requirements were fully satisfied. A drill is conducted at both Salem and Hope Creek on a weekly basis. The high degree of training and experience is reflected in the excellent performance noted during their annual exercise. Emergency response training is current; 1,450 personnel are qualified for one or more emergency response positions - 600 for each site and 250 for both sites. Operators received eight hours of emergency preparedness training including response to one fast breaking scenario "run" on the Hope Creek simulator. Health Physicists demonstrated the ability to correctly use the four available dose projection systems. A dosimetry comparison was made involving three of the licensee's systems, systems for both states and the NRC. The results were within acceptable limits.

A review of communications and call-in test data also showed satisfactory results. Independent audits are current. Executives and senior managers interface with State government officials. Safety parameter display systems (SPDS) are in place and functional at Hope Creek and Salem, a Post Implementation Appraisal for Salem has been conducted. No significant deficiencies have been identified to date.

PSE&G has put considerable effort into working with off-site authorities to complete final review and approval of off-site plans. Results of the annual public Alert and Notification system (sirens, etc.) test specified by FEMA were submitted during December 1986. FEMA has not completed the review. The Delaware Emergenc Plan was given contingent, favorable reviews and comments per 44 CFR 350.12, pending acceptance by FEMA of the siren test data. New Jersey has submitted its plan for similar review. The licensee has developed a computerized data base for special needs residents (hearing and mobility impaired) living within the ten mile Emergency Planning Zone.

Additional licensee strengths in this area are noted as follows: (1) Contracts are in place to provide for plume aerial surveillance; (2) ten diverse, redundant communications systems are in place; and (3) a full-time, 37 person site fire department is available for emergency support, with half of them qualified as Emergency Medical Technicians. The staff is divided into shifts and work around-the-clock.

In summary, a strong management commitment to emergency preparedness is evident by the hardware and comprehensive training program achievements in this area, and by licensee cooperation with outside agencies toward approval of State Emergency Plans. Licensee effectiveness is demonstrated by the consistent high quality performance of the staff during emergency exercises.

2. Conclusion

Rating: 1

Trend: None

3. Board Recommendations

Licensee: None

NRC: None

F. Security and Safeguards (5%, 158 Hours)

1. Analysis

There is a consolidated Security Plan for the Artificial Island complex, including the Salem and Hope Creek facilities. Consequently, the assessment of security and safeguards is a combined evaluation of both facilities' protection capabilities.

During the previous assessment periods, both the Salem and Hope Creek security programs were assessed as Category 1. These ratings were influenced by a well-planned transition for the integration of the two security programs; a major upgrade of security systems to include the installation of an integrated security computer system and associated hardware, computerized access control devices, state-of-the-art assessment aids and new search equipment; and a strong security management staff.

Management's attention to, and involvement in, assuring the implementation of an effective and quality security program remained evident during this assessment period. The licensee was very effective in maintaining good support for the security program from other functional groups at both stations. Frequent organizational interfaces and good working relationships were apparent from the professional attitude of all employees toward the security program, as well as the attention given by the maintenance groups to 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 special 30-day training course on regulatory and security program requirements and objectives. In addition, security management continued to participate in nuclear industry groups engaged in 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 factored into the training and qualification program in an effort to prevent their recurrence. The appraisal program is in addition to the NRC's required annual program audit that is conducted by experienced quality assurance personnel. The last annual audit was 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 demonstrates the licensee's desire to implement an effective and quality security program.

During this assessment period, the licensee engaged a new contractor to provide the administration, supervision, and training of the security force. The new contractor was able to retain most of the incumbent members of the force. The change in contractors went smoothly as a result of good planning on the part of the licensee.

Staffing of the security organization appears adequate, as evidenced by a controlled use of overtime. The installation and maintenance of state-of-the-art systems and equipment has significantly reduced the use of compensatory posts for systems and equipment failures and, thus, reduced the need for extensive overtime. Both the licensee's proprietary supervisors and the contractor's supervisors are well trained and experienced, and exhibit a conservative and positive attitude toward security. Security force personnel are also well-trained and exhibit 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 is another indicator of the licensee's desire to implement an effective and quality security program. It is also reflected by the generally excellent state of cleanliness in all security facilities.

The training and requalification program is 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 are conducted which test the proficiency of individuals on general and specific security program requirements. The on-the-job performance evaluations have provided management the ability to review and enhance the performance and job knowledge of security personnel and to correct deficiencies as they are detected. This is another initiative that is indicative of the licensee's desire to implement an effective program.

During the assessment period, there were two events involving security guards who were discovered being unattentive to duties. One (at Hope Creek) was discovered by the NRC Resident Inspector and the licensee was cited for the violation. The other (at Salem) security guard was discovered by the on duty security shift supervisor.

In each case, the licensee took prompt and effective corrective action. The associated security event reports submitted by the licensee pursuant to 10 CFR 73.71c were complete and well written, and required no further information from the licensee. These events appear to be isolated cases of poor performance and do not indicate a programmatic problem. They occurred during the latter part of the assessment period and until that time, the licensee's overall 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.

During this assessment period, the licensee submitted three "temporary Changes" to the Plans. These changes included compensatory measures to be implemented during construction of a building addition inside the protected area and during the special supervisory training program. The changes were clear and fully described the issues. Prior to submittal of these changes, the licensee discussed them with Region I safeguards personnel at a licensee-requested meeting on site and at the Region I office. The licensee also provided its response to the August 4, 1986 Miscellaneous Amendments to 10 CFR 73.55 codified by the NRC, and submitted the consolidations of the Salem and Hope Creek Security Plans, Safeguards Contingency Plans, and Training and Qualification Plans into the Artificial Island Security Plan, Safeguards Contingency Plan, and Training and Qualification Plan. The Artificial Island Plans were generally of high quality; however, several discrepancies were identified during the NRC review. A management meeting was held with the licensee during which the licensee was able to fully explain each discrepancy and provide acceptable resolutions. The licensee subsequently submitted amendments to the plans that resolved the discrepancies.

Considering the magnitude of the effort involved in consolidating the Salem and Hope Creek plans into one, the discrepancies were considered by the NRC to be minor oversights that did not materially effect the quality of the Artificial Island Plans. The safeguards licensing group is adequately staffed with experienced personnel who are knowledgeable of NRC security program objectives and committed to maintaining an effective and high quality security program. Management involvement, advance planning, and the expenditure of necessary capital and personnel resources was noteworthy and indicative of high level management support.

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.

2. Conclusion

   Rating: 1

   Trend: None

3. Board Recommendations

   Licensee: None

   NRC: None

G. Engineering Support (4%, 106 Hours)

1. Analysis

The functional area of outages was evaluated during the previous SALP period, however due to a lack of normal outage activities no rating was issued. The board recommended that the licensee meet with NRC to present the results of the engineering department task force and plans for addressing the findings. This meeting was conducted on April 24, 1987.

The major weakness noted during the previous SALP period involved a need for improvement in the engineering department. The licensee established a task force to review performance measurement systems, and evaluate methods to simplify management processes. The task force, including an outside management consultant, concluded that although the above areas needed to be addressed, a comprehensive department reorganization was also needed. A major portion of this assessment period was consumed by defining job descriptions, conducting interviews and making personnel selections in order to establish a project matrix organization. Since the new organization was implemented during December 1987, there has not been sufficient basis on which to make a performance evaluation. Significant changes to the engineering department and its interaction with the station include:

- Implementation of an Engineering Work Request System,
- Use of a Project Management System,
- Revision of the Design Change Process,
- Establishment of a Project Matrix Organization; and,
- More direct station input in prioritizing engineering work.

The engineering department's performance remained inconsistent throughout this assessment period. Long delay times in updating instrument calibration data (ICD) cards hampered the station's ability to complete some surveillance tests and instrument calibrations. Failure to meet design change package issuance dates had an adverse affect on outage scheduling. On two occasions DCP work was commenced prior to obtaining SORC approval. Engineering's failure to update composite drawings directly contributed to a turbine auxiliary cooling system isolation during corrective maintenance. Engineering was slow to respond to QA concerns relating to updating of the master equipment list and lacked aggressiveness in resolving numerous cooling tower blowdown sample pump failures. Offsite engineering ard the system engineers responded promptly and effectively to make repairs to recirculation system small line pipe cracks.

The station system engineers have continued to perform a valuable and effective function. They have frequently involved themselves with plant problems early enough to ensure a well thought out and technically correct approach is taken. During this assessment period all system engineers completed a 5 month SRO level training program. This comprehensive training program has been effective in ensuring each engineer has an understanding of the integrated plant and recognizes operational restrictions. In addition to individual system responsibilities, the system engineers and the technical department staff play a prominent role in the incident report program, LER development, station commitment tracking program, annunciator reduction efforts, temporary modification tracking, and act as station qualified reviewers.

A clearer definition of the system engineers' role is needed. An occasional sense of frustration and confusion has been created among the system engineers due to the frequently changing priorities and inconsistent expectations of other departments. The absence of a clear job description and steady priorities may have contributed to 2 problems with main steam line (MSL) radiation monitors discovered this assessment period. On one occasion, the trip setpoints were found to be set non-conservatively high beyond the technical specification limits. At another time a delay in changing a MSL radiation monitor trip setpoint may have contributed to an inadvertent scram. Operations had identified the need to change the setpoint weeks before the scram but delays were experienced in writing and approving the DCP.

In summary, station engineering support has been adequate, however the role of system engineers needs to be more clearly defined. The performance of the new engineering department organization could not be evaluated during this assessment period and will be closely monitored during the next assessment period.

2. Conclusion

Rating: 2

Trend: None

3. Board Recommendations

Licensee Clarify the system engineers' function and responsibilities.

NRC None

H. Licensing Activities

1. Analysis

During the previous SALP period, the licensee was rated as Category 1. The previous SALP input noted that the licensee's corporate management has exhibited strong involvement and control in Hope Creek licensing activities and that most of the licensee's submittals have exhibited careful forethought, thorough consideration of the proposed action and technically sound responses.

At the beginning of the current SALP period, the licensing backlog for Hope Creek was eleven (11) active licensing action items representing a mixture of licensee and staff initiatives. Twenty one (21) actions, almost all of which were licensee initiatives, were added and nineteen actions (19) were closed during the period, leaving a backlog of thirteen (13) actions at the end of SALP period.

Management involvement in assurance of quality in licensing activities as reflected by the timeliness of submittals, adequacy of technical approach and completeness of information in submittals requesting NRC licensing action have varied throughout the SALP period. The licensee demonstrated good involvement by management in the issue of the license condition requiring that four additional SPDS parameters be completed prior to restart following the first refueling outage. The licensee evaluated the SPDS and determined that it would be better to replace the complete SPDS with a new one that includes the four additional parameters and provides additional flexibility than to add the four parameters to the existing system. The licensee requested a timely meeting to discuss the issue, then made a timely request for a schedular extension in the license condition to allow it to properly install and test the new SPDS. NRC approved the request. While most requests for licensing action have been timely, the licensee's untimely requests for an exemption from the requirements of Appendix J, i.e., testing requirements, and code relief and Technical Specification changes for testing requirements on certain valves, for a Technical Specification change related to the source range monitor count rate requirements, and for approval of a revised inservice inspection program and its associated code relief requests indicate that more attention should have been given to schedular planning for these submittals.

With regard to the resolution of technical issues, a number of the licensee's requests for licensing action e.g., the initial request for an emergency technical specification change related

to the safety relief valve acoustic monitors, its initial proposal with respect to use of the standby liquid control system in meeting ATWS rule requirements, its initial request to revise suppression chamber water level technical specification, its request for exemption from the local leak rate testing requirements of Appendix J, and its request to revise the high pressure coolant injection system's technical specification response time requirements, were deficient in either the proposed technical resolution or in the information supporting and justifying the proposal.

With regard to NRC initiatives, the licensee's responses to the staff's requests for additional information have generally been timely with respect to the need for completing the review of the related activity and have been technically responsive and adequate.

During the current SALP period, the NRC initiated its Safety Issues Management System (SIMS) to improve its tracking of implementation schedules associated with safety issues. The licensee was responsive to the SIMS initiative and provided a couple of SIMS updates, most recently on November 3, 1987.

As evidenced by their generally prompt and technically accurate responses to the oral and written questions discussed with the NRC, we conclude that the licensee maintains a qualified and well trained staff.

In summary, the licensee continues to maintain a knowledgeable licensing staff and has been responsive to the NRC's initiatives. However, the quality of the licensee's submittals requesting licensing actions has varied throughout the SALP period. The licensee showed evidence of inadequate prior planning for its submittals for several requests in that insufficient time was allowed for the NRC to complete its reviews. It also did not conduct an adequate review of several submittals in that these submittals did not provide an adequate technical approach or did not provide sufficient information to support the technical approach.

2. Conclusion

Rating: 2

Trend: None

3. Board Recommendations

Licensee Provide additional effort to assure the quality of all submittals; and submit requests requiring NRC action earlier with respect to the required action date.

NRC None

I. Training and Qualification Effectiveness

1. Analysis

A high license examination pass rate and the good performance of both licensed and non-licensed personnel throughout the plant provided evidence of an effective training program during the previous SALP period. The licensee was noted to have dedicated significant resources toward training facilities. A category 2 rating was assigned to this area.

The various aspects of this functional area have been considered and discussed as an integral part of other functional areas and the respective inspection hours have been included in each one. Consequently, this discussion is a synopsis of the assessments related to training conducted in other areas. Training effectiveness has been measured primarily by the observed performance of licensee personnel and, to a lesser degree, as a review of program adequacy. No license exams were administered during this assessment period.

The licensee operates and maintains well equipped training facilities which provide training for all of the nuclear departments, including operations, I&C technicians, electricians, mechanics, chemists, health physics technicians, machinists, and welders. The Hope Creek training program is modeled after the Salem program which has been INPO accredited in all ten training areas. The licensee's corporate and station management involvement in training is good. Training review groups evaluate training on a regular basis and provide feedback to the training program. The training department is staffed with experienced personnel. In the non-licensed training area a permanent staff of approximately 50 instructors and supervisors administer the training program to over 700 non-licensed operators, craft, technical, and supervisory personnel. Laboratory facilities are excellent and provide hands on training on such things as rebuilding circuit breakers, Limitorque valve operators, and motors. During this assessment period, improvements to the nuclear department laboratories included additions of a Cyberex inverter, fire alarm systems, and cable tray systems for training purposes. The temporary assignment of licensed operators to the training department is a positive feedback mechanism.

A comprehensive six month training program for all station system engineers was conducted during this SALP period. The course of study included basic engineering principles, in-depth system reviews, integrated plant operations, technical specifications, and simulator experience. This broad background has increased the operational awareness of the system engineers.

Twenty four of the 57 reportable events during this assessment period were judged to be caused by personnel errors. Whereas this ratio could indicate a weakness in some aspects of the training program no significant common cause could be identified. Many of these personnel errors were caused by lapses of attentiveness or attention to detail rather than a lack of specific knowledge. For example, 7 reportable events involved a missed or overdue surveillance test, or a breakdown in communications resulting in a missed action statement. Five others involved manipulating an incorrect switch or component. This type of attention to detail needs to be stressed by supervision on a daily basis in addition to periodic reinforcement through formal training. A lack of knowledge may have contributed to four unrelated reportable events, however no programmatic training program deficiencies could be identified.

Strengths noted throughout this SALP report including licensed operator performance, security, maintenance, and health physics are indicative of the effectiveness of the training program. Emergency preparedness and response training was specifically evaluated and found to be effective during this assessment period. This was based upon a routine program inspection and on the observation of a full participation emergency exercise conducted on September 9, 1987.

The training department has coordinated with the station in taking advantage of training opportunities within the plant. An example was the repair work conducted on the small diameter instrument line off of the recirculation piping in the drywell. Both the mock-up training and the actual job were video taped for real time and future training efforts.

In summary, the performance of licensed and non-licensed personnel demonstrates that an effective training program has been implemented. Personnel errors during this assessment period resulted from inattention to detail rather than specific training deficiencies. Enhancements continue to be made at the training facility in an attempt to increase direct simulation of installed in-plant equipment. Formal and on the job training efforts need to continue placing a strong emphasis on individual attention to detail and procedural compliance.

2. Conclusion

Rating: 1

Trend: None

3. Board Recommendations

Licensee: Resolve personnel error/inattention to detail problems.

NRC: None

J. Assurance of Quality

1. Analysis

This functional area was rated as category 2 during the previous SALP period. A generally effective program for ensuring quality had been established, plant procedures were of high quality, and the role of the individual worker was properly emphasized. The board also concluded that increased management attention was warranted in the radiological controls area.

The primary purpose of this functional area is to assess the effectiveness of the licensee's program for identifying and correcting problems. This functional area is not an assessment of the quality assurance department alone, but includes all management control, verification, and oversight activities which affect or assure the quality of plant activities, structures, systems, and components. It also assesses the attitude and performance of plant staff personnel.

Various aspects of this area were routinely examined as part of the resident inspector and region based specialist inspection programs. The licensee has maintained a high emphasis on quality throughout all levels of the organization. Although there are occasional breakdowns and areas to be strengthened, good worker attitude and performance indicate that the basic program is sound. Specific inspections found the procurement system, record storage, and corrective actions system to be adequate.

Plant procedures were originally written based upon the operating experience evaluation program's review of over 3000 industry documents from the NRC, INPO, and vendors. Commitments and requirements are easily recognizable in the body of a procedure by its specific closing document (CD) number in the margin. This system ensures that the reference document is reviewed prior to changing an applicable procedure step. Technicians and operators frequently initiate procedure changes to improve the quality and accuracy of these procedures, however delays in incorporating some of these changes created frustration and complacency in the instrument and controls area late in the assessment period. Increased familiarity with procedures may also be introducing loss of formality and lack of attention to detail as evidenced by the bypassing of independent verification requirements and improper return to service of a Filtration Recirculation and Ventilation System (FRVS) fan. The licensee has implemented a Human Performance Evaluation system to investigate the causes for various personnel errors and recommend corrective actions.

The incident report program remains an effective tool for identifying and resolving plant problems, however improvement is needed in the timeliness of developing, implementing, and documenting corrective actions. Over 200 incident reports were generated in 1987 and some with little safety significance consumed much more staff time than was warranted and delayed the processing of high priority reports. The commitment tracking system (CTS) which tracks the status of NRC open items, LERs, commitments, and inner- company commitments has been highly effective.

Management involvement with all aspects of plant operations is evident on a daily basis. Department managers and first line supervisors frequently tour the plant to assess work activities, conditions, and housekeeping. The use of tailgate meetings in each department helps foster intra department communication. The relocation of manager offices to the department work space will further encourage internal communications. Management status and planning meetings, shift briefings, and supervisor planning meetings each promote intra department communication which reduce future scheduling conflicts.

The site quality assurance (QA) organization and the station have open lines of communication and interact on a daily basis. QA is frequently requested to perform inspections on short notice in order to provide an independent assessment of certain issues and QA personnel are occasionally requested to accomplish specific tasks. For example, QA was assigned responsibility for coordinating and facilitating the completion of backlogged design change documentation packages. The QA organization should ensure that these types of assignments do not interfere with its independent assessment role. The assessments conducted by QA go far beyond programmatic reviews and have included observation of technical specification surveillance tests, equipment failure analyses, fire suppression system reviews, and instrument calibration data accuracy investigations.

The engineering department's reorganization process appears to have had an adverse affect on performance. Engineering response to plant requests was inconsistant and was slow to resolve QA findings relating to master equipment list and vendor manual updates.

The onsite safety review (OSR) group has done a noteworthy job in the review of plant significant events, safety evaluations, and system inspections. Their recommendations are generally well though out and technically correct.

During this assessment period, OSR conducted a Safety System Functional Review which was similar to an NRC Safety System Functional Inspection (SSFI). This review was of high quality and future reviews of this type are planned.

A professional and conscientious attitude is displayed by all members of the plant staff. Free and open communication is encouraged with all outside groups, including the NRC. However, the shifting priorities and inconsistent interaction with other departments has left some system engineers frustrated with their role and function. The transfer of personnel between departments and the temporary assignment of licensed operators to training and emergency planning has aided in improving the overall quality of station performance.

In summary, the licensee has implemented the procedures, programs, and work environment to promote high quality. Continued management attention is warranted in the areas of engineering department performance, timeliness of incident report followup and defining the role of system engineers.

2. Conclusion

Rating: 2

Trend: Improving

3. Board Recommendations

Licensee None

NRC None

V. Supporting Data and Summaries

A. Investigations, Petitions and Allegations

Two allegations were received during the assessment period relating to the following areas:

- Security computer access controls during the night shift
- Adequacy of plant security during regular security drills

Both of the allegations were determined to be unsubstantiated.

B. Escalated Enforcement Actions

None

C. Management Conferences

April 24, 1987 - Management meeting to discuss the results of the engineering department review of engineering performance. An overview of the new organization was provided.

July 29, 1987 - Meeting to discuss the site specific radiological control program.

October 19, 1987 - Enforcement Conference to discuss the cause and corrective actions relating to control of plant equipment problems.

D. Licensee Event Reports (LERs)

1. Report Quality

Utilizing the basic evaluation methodology presented in NUREG-1022, Supplement 2, the overall quality of licensee event reports (LERs) is very good. A strong point for Hope Creek's LERs continues to be the in-depth discussion of the mode, mechanism, and effect of failed components. There has been improvement in the identification of manufacturer and model number of failed components. There has also been improvement in the safety assessment discussions, but this is an area which would benefit from added attention. While reviewing 57 LERs this assessment period, clarification was needed on three occasions by the staff.

2. Causal Analysis

Four LERs (354/87-01, 87-11, 87-22, and 88-01) concerned radiation protection and chemistry personnel errors which resulted in four technical specification violations. The first three LERs which occurred between January and May, related to the failure to complete scheduled surveillance tests or required action statements. These oversights were caused by a lack of attention to detail. The fourth LER concerned a discrepancy between technical specification requirements and the design of installed equipment. Four LERs (354/87-09, 87-23, 87-34, and 87-40) described operations department personnel errors which resulted in a technical specification violation or an engineered safety feature actuation. Three of these four events were caused by non-licensed equipment operators. Corrective action taken in this area after the October 19, 1987 Enforcement Conference may have largely resolved the problems as evidenced by no recurrence for a major portion of the SALP period. Three LERs (354/87-03, 87-20, and 87-28) reported reactor water cleanup (RWCU) inadvertent isolations. RWCU logic and double valve isolation design changes and installation of improved interior panel lighting are scheduled for the refueling outage in February, 1988.

During this assessment period, 15 licensee identified violations of technical specifications were noted with only 4 being cited. Although the station's effort to identify violations has been successful, additional management attention is needed to reduce the number of violations committed. Of the 24 LERs caused by personnel error, the major weakness was in the area of attention to detail (6) and procedural compliance. Formal and on the job training must consistently reinforce attention to detail and procedural compliance standards.

The number of LERs has declined from 89 last SALP period to 57 during this current assessment period. Although specific conclusions are complicated by the fact that the previous SALP period included initial plant startup and the power ascension program, the number of LERs has been significantly reduced.

TABLE 1

HOPE CREEK
INSPECTION REPORT ACTIVITIES

REPORT NUMBER INSPECTION DATES	INSPECTOR	HOURS	AREAS INSPECTED
86-56 11/18/86 - 12/31/86	RESIDENT	151	ROUTINE RESIDENT INSPECTION
86-57 12/01/86 - 12/04/86	SPECIALIST	52	INSPECTION IN RESPONSE TO REGION I ALLEGATION RI-86-A-0130, CHEMISTRY
86-58 12/01/86 - 12/12/86	SPECIALIST	68	ROUTINE INSPECTION OF THE OVERALL POWER ASCENSION PROGRAM.
86-59 12/03/86 - 12/05/86	SPECIALIST	20	INSPECTION OF EXTERNAL EXPOSURE CONTROLS INCLUDING HIGH RADIATION AREA CONTROLS INTERNAL EXPOSURE CONTROLS ALARA & DOSIMETRY TESTING.
86-60 12/30/86 - 12/30/86	SPECIALIST	6	REVIEW OF THE LICENSEE'S PROGRAM FOR CONDUCTING SECURITY DRILLS
87-01 01/01/87 - 02/09/87	RESIDENT	162	ROUTINE RESIDENT INSPECTION
87-02 01/12/87 - 01/16/87	SPECIALIST	83	ROUTINE INSPECTION OF LICENSEE'S SOLID RADIOACTIVE WASTE PROGRAM
87-03 02/09/87 - 02/13/87	SPECIALIST	132	ROUTINE, ANNOUNCED INSPECTION OF THE LICENSEE'S EMERGENCY PREPAREDNESS PROGRAM
87-04 01/27/87 - 01/30/87	SPECIALIST	48	ROUTINE INSPECTION OF THE NONRADIOLOGICAL CHEMISTRY PROGRAM
87-05 02/10/87 - 03/09/87	RESIDENT	146	ROUTINE RESIDENT INSPECTION
87-06 02/24/87 - 02/26/87	SPECIALIST	23	ROUTINE INSPECTION OF POWER ASCENSION TEST PROGRAM FOLLOWING COMPLETION OF TESTING ACTIVITIES.
87-07 03/09/87 - 03/13/87	SPECIALIST	40	ROUTINE INSPECTION OF LICENSEE'S GASEOUS AND LIQUID RADWASTE CONTROL PROGRAM.
87-08 03/10/87 - 04/13/87	RESIDENT	229	ROUTINE RESIDENT INSPECTION

TABLE 1 (cont.)

INSPECTION REPORT ACTIVITIES

87-09 04/06/87 - 06/16/87	SPECIALIST	41	INSPECTION OF NON LICENSED STAFF TRAINING
87-10 03/16/87 - 03/20/87	SPECIALIST	90	INSPECTION OF POST-ACCIDENT MONITORING SYSTEM TO ASSESS CONFORMANCE WITH REGULATORY GUIDE 1.97
87-11 04/14/87 - 05/11/87	RESIDENT	168	ROUTINE RESIDENT INSPECTION
87-12 04/15/87 - 04/20/87	SPECIALIST	7	EFFECTIVENESS OF QUALITY CONTROL AND QUALITY ASSURANCE IN PROCUREMENT & PREVENTATIVE MAINTENANCE FOR STORED ITEMS
87-13 05/04/87 - 05/06/87	SPECIALIST	24	INSPECTION OF LICENSING ACTIVITIES IN AREAS OF SURVEILLANCE TESTING, PROCEDURES AND RECORDS.
87-14 05/12/87 - 06/08/87	RESIDENT	182	ROUTINE RESIDENT INSPECTION
87-15 05/18/87 - 05/21/87	SPECIALIST	31	PHYSICAL SECURITY INSPECTION
87-16 6/09/87 - 7/13/87	RESIDENT	212	ROUTINE RESIDENT INSPECTION
87-17 07/14/87 - 08/17/87	RESIDENT	189	ROUTINE RESIDENT INSPECTION
87-18 07/16/87 - 07/16/87	SPECIALIST	2	MEETING BETWEEN PSE&G AND NRC REGION I TO DISCUSS CONSOLIDATED EMERGENCY PLAN
87-19 07/24/87 - 08/14/87	SPECIALIST	49	RADIATION PROTECTION INSPECTION
87-20 09/08/87 - 09/10/87	SPECIALIST	189	INSPECTION AND OBSERVATION OF LICENSEE'S FULL-PARTICIPATION, EMERGENCY EXERCISE ON SEPTEMBER 9, 1987
87-21 08/17/87 - 08/21/87	SPECIALIST	38	INSPECTION OF LICENSEE PROGRAM FOR RESOLVING QA ACTION REQUESTS
87-22 08/18/87 - 09/28/87	RESIDENT	196	ROUTINE RESIDENT INSPECTION

TABLE 1 (Cont.)

INSPECTION REPORT ACTIVITIES

87-23 10/27/87 - 11/30/87	RESIDENT	250	ROUTINE RESIDENT INSPECTION
87-24 09/29/87 - 10/26/87	RESIDENT	166	ROUTINE RESIDENT INSPECTION
87-25 09/21/87 - 09/25/87	SPECIALIST	37	INSPECTION OF RADIOLOGICAL CONTROLS DURING THE OUTAGE
87-26 11/16/87 - 11/20/87	SPECIALIST	40	PROGRAMMATIC REVIEW OF MAINTENANCE
87-27 11/16/87 - 11/20/87	SPECIALIST	24	ROUTINE RADIOLOGICAL CONTROLS INSPECTION
87-28 11/16/87 - 11/20/87	SPECIALIST	82	INSPECTION OF THE LICENSEE'S RADIOCHEMICAL MEASUREMENTS PROGRAM
87-29 12/01/87 - 01/04/88	RESIDENT	180	ROUTINE RESIDENT INSPECTION

TABLE 2

HOPE CREEK
INSPECTION HOUR SUMMARY

AREA	HOURS	HOURS ANNUALIZED	PERCENT
OPERATIONS	1325	1166	39
RAD PROTECTION	680	598	20
MAINTENANCE/OUTAGES	298	262	9
SURVEILLANCE	327	287	10
EMERGENCY PREP.	428	377	13
SEC/SAFEGUARDS	179	158	5
ENGINEERING SUPPORT	120	106	4
TRAINING			0
LICENSING			0
QUALITY ASSURANCE			0
TOTALS:	3357	2955	100

TABLE 3

HOPE CREEK
ENFORCEMENT SUMMARY

A. Violations versus Functional Area by Severity Level

AREA	No. of Violations in Each Severity Level						
	1	2	3	4	5	DEV	TOTAL
OPERATIONS	0	0	0	3	0	1	4
RAD PROTECTION				3	2		5
MAINTENANCE/OUTAGES							
SURVEILLANCE				3			3
EMERGENCY PREP.							
SEC/SAFEGUARDS				1			1
ENGINEERING SUPPORT							
TRAINING							
LICENSING							
ASSURANCE OF QUALITY							
TOTALS:				10	2	1	13

TABLE 3

B. Summary of Violations

INSPECTION REPORTS INSPECTION DATES	REQUIREMENT VIOLATED	SEVERITY LEVEL	FUNCTIONAL AREA	DESCRIPTION
354/86-57 12/01/86 - 12/04/86	TECH SPEC	5	RAD-CHEM	FAILURE TO FOLLOW PROCEDURE FOR DEVIATION FROM ANSI/ANS 3.1-1981 FOR CHEMISTRY ENGINEER
354/86-59 12/03/86 - 12/05/86	TECH SPEC 6.11	5	RAD-CHEM	LICENSEE DID NOT ADHERE TO PROCEDURES
354/87-01 01/01/87 - 02/09/87	TECH SPEC	4	SURVEILLANCE	FAILURE TO TAKE DLD GRAB SAMPLES
354/87-02 01/12/87 - 01/16/87	10CFR20.311 (b)	4	RAD-CHEM	FAILURE TO INCLUDE IRON-59 AND ZIRCONIUM-95 ON MANIFEST
354/87-02 01/12/87 - 01/16/87	10CFR20.311 (C)	4	RAD-CHEM	10CFR20.311(C) IMPROPER CERTIFICATION
354/87-08 03/10/87 - 04/13/87	TECH SPEC	4	ENGINEERING	NON-CONSERVATIVE MSL RAD MONITOR SETTINGS
354/87-14 05/12/87 - 06/08/87	FSAR, AMEND. 14	D	OPERATIONS	CONTROL ROOM COMMON H2O2 HEAT TRACE ALARM
354/87-16 06/09/87 - 07/13/87	TECH SPEC	4	OPERATIONS	THERMAL OVERLOAD BYPASS NOT INSTALLED
354/87-17 07/14/87 - 08/17/87	TECH SPEC	4	OPERATIONS	RHR PRESSURE TRANSMITTER ISOLATED/HPCI ROOM COOLER INOPERABLE
354/87-17 08/14/87 - 08/17/87	TECH SPEC	4	OPERATIONS	ADS AND HPCI ACTION STATEMENTS NOT ENTERED

TABLE 3 (Cont.)

354/87-22 08/18/87 - 09/28/87	TECH SPEC	4	SECURITY/ SAFEGUARDS	GUARD ATTENTIVENESS
354/87-23 10/27/87 - 11/30/87	TECH SPEC	4	SURVEILLANCE	UNAUTHORIZED TEMPORARY MODIFICATIONS
354/87-29 12/01/87 - 01/04/88	TECH SPEC	4	SURVEILLANCE	INADEQUATE RESTORATION OF FRVS FOLLOWING SURVEILLANCE

TABLE 4

HOPE CREEK
LICENSEE EVENT REPORTS

A. LER by Functional Area

	Number by Cause Codes						
FUNCTIONAL AREA	A	B	C	D	E	X	TOTAL
OPERATIONS	7	7	0	2	9	1	26
RAD PROTECTION	4	1					6
MAINTENANCE/OUTAGES	3			2			5
SURVEILLANCE	8	6		1	2		17
EMERGENCY PREP.							
SEC/SAFEGUARDS							
ENGINEERING SUPPORT	2						2
TRAINING		1					1
LICENSING							
QUALITY ASSURANCE							
TOTALS:	24	15	0	6	11	1	57

LEGEND:

A - PERSONNEL ERROR
B - DESIGN, MANUFACTURING, INSTALLATION
C - EXTERNAL
D - PROCEDURE
E - COMPONENT FAILURE
X - OTHER

TABLE 4 (Cont.)

B. LER Synopsis

HOPE CREEK

LER NUMBER	EVENT DATE	CAUSE CODE	DESCRIPTION
86-091-00	12/05/86	A	INADVERTENT OPENING OF "P" SAFETY RELIEF VALVE
86-092-00	12/06/86	X	UNEXPECTED ACTUATION OF HPCI, RCIC AND CHANNEL D OF THE PRIMARY CONTAINMENT ISOLATION SYSTEM (PCIS)
86-093-00	12/09/86	D	SHUTDOWN COOLING ISOLATION DURING INSTRUMENT BACKFILLING
86-094-00	12/10/86	B	INADVERTENT ISOLATION OF REACTOR WATER CLEANUP SYSTEM
87-001-00	01/06/87	A	INADVERTENT OMISSION OF CONTAINMENT ATMOSPHERE GRAB SAMPLE COLLECTION AND ANALYSIS
87-002-00	01/08/87	A	INADVERTENT CONTROL ROOM VENTILATION SYSTEM ISOLATION RESULTING IN CREF ACTUATION
87-003-00	01/12/87	B	REACTOR WATER CLEANUP SYSTEM ISOLATION CAUSED BY INADVERTENT GROUNDING OF TEST EQUIPMENT
87-004-00	01/13/87	E	REACTOR WATER CLEANUP SYSTEM ISOLATION DUE TO SPURIOUS SIGNAL INDUCED BY TEMPERATURE MONITORING
87-005-00	01/23/87	E	PRIMARY CONTAINMENT ISOLATION SYSTEM ACTUATION DUE TO MOMENTARY LOSS OF POWER TO RADIATION MONITORING EQUIPMENT
87-006-00	01/23/87	A	ENGINEERED SAFETY FEATURE ACTUATION DUE TO PERSONNEL ERROR DURING SURVEILLANCE

TABLE 4 (Cont.)

LER NUMBER	EVENT DATE	CAUSE CODE	DESCRIPTION
87-007-00	01/23/87	B	UNANTICIPATED ACTUATION OF HPCI OUTBOARD STEAM SUPPLY VALVE CAUSED BY HIGH TEMPERATURE DIFFERENTIAL - DESIGN ERROR
87-008-00	01/26/87	A	INADVERTENT START OF CORE SPRAY PUMP "B" DUE TO IMPROPER PERFORMANCE OF SURVEILLANCE PROCEDURE
87-009-00	01/27/87	A	UNDETECTED INOPERABILITY OF COOLING TOWER BLOWDOWN RMS SAMPLE PUMP RESULTING IN VIOLATION OF T.S. - PERSONNEL ERROR
87-010-00	01/30/87	B	NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM CHANNEL "A" ISOLATION CAUSED BY GROUNDING TEST EQUIPMENT IN STEAM LEAK DETECTION CABINETS
87-011-00	08/21/86	A	DELAYED TESTING OF 4 LICENSED RADIOACTIVE SOURCES - T.S. VIOLATION DUE TO PERSONNEL ERROR
87-012-00	02/03/87	E	REACTOR WATER CLEANUP SYSTEM ISOLATION DUE TO SPURIOUS SIGNAL INDUCED BY TEMPERATURE MONITORING MODULES
87-013-00	02/05/87	E	LOSS OF REACTOR PROTECTION SYSTEM BUS "B" DUE TO DE-ENERGIZATION OF MOTOR CONTROL CENTER
87-014-00	02/11/87	E	FORCED REACTOR SHUTDOWN DUE TO UNIDENTIFIED LEAKAGE GREATER THAN 5 GPM & SUBSEQUENT MANUAL SCRAM DUE TO RSCS ROD BLOCK WHEN SHUTTING DOWN
87-015-00	02/13/87	B	AUTO-ISOLATION OF THE CONTROL ROOM VENTILATION SYSTEM CAUSED BY SPURIOUS SIGNAL FROM RADIATION MONITORING SYSTEM
87-016-00	02/18/87	E	AUTOMATIC START OF FILTRATION, RECIRCULATION, AND VENTILATION SYSTEM DUE TO UNKNOWN CAUSES

TABLE 4 (Cont.)

LER NUMBER	EVENT DATE	CAUSE CODE	DESCRIPTION
87-017-00	02/24/87	A	REACTOR SCRAM DURING PERFORMANCE OF A SURVEILLANCE PROCEDURE ON REACTOR WATER LEVEL INSTRUMENTATION
87-018-00	02/24/87	B	UNANTICIPATED FAILURE OF MSIV TO CLOSE ON SIGNAL - BLOCKED PORT OF SOLENOID VALVE OPERATOR
87-019-00	04/13/87	A	T.S. VIOLATION - MAIN STEAM LINE RADIATION MONITORS SET ABOVE ALLOWABLE LIMITS DUE TO ADMINISTRATIVE ERRORS
87-020-00	04/21/87	B	ISOLATION OF RWCU WHILE PLACING FILTER/DEMINERALIZER IN "HOLD" MODE-PROBABLE DESIGN DEFICIENCY
87-021-00	05/08/87	B	REACTOR PROTECTION SYSTEM (RPS) BUS "A" INADVERTENTLY DE-ENERGIZED DURING PREPARATION FOR SURVEILLANCE RESULTING IN ESF ACTUATION
87-022-00	05/09/87	A	T.S. VIOLATION-COOLING TOWER BLOWDOWN RADIATION MONITORING SYSTEM SAMPLE PUMP OUT OF SERVICE ¶ 12 HOURS & REQUIRED GRAB SAMPLES NOT TAKEN
87-023-00	6/05/87	A	T.S. VIOLATION - EMERGENCY DIESEL GENERATOR B & C STARTING AIR PRESSURE LOW DUE TO TS INCONSISTENCY
87-024-00	6/08/87	A	UNANTICIPATED PRIMARY CONTAINMENT ISOLATION SYSTEM TRIP - ESF ACTUATION - PERSONNEL ERROR
87-025-00	6/11/87	D	NON-CONSERVATIVE LIQUID EFFLUENT SAMPLING FREQUENCY DUE TO INCONSISTENCY BETWEEN T.S. REQUIREMENTS & PROCEDURAL REQUIREMENTS
87-026-00	6/15/87	A	T.S. VIOLATION - MOV THERMAL OVERLOADS INSTALLED WITHOUT BYPASS CAPABILITY DUE TO INADEQUATE TS & DESIGN REVIEWS
87-027-00	6/26/87	E	SPURIOUS ISOLATION OF HIGH PRESSURE COOLANT INJECTION INBOARD STEAM ISOLATION VALVE DUE TO FAILED TEMPERATURE MODULE

TABLE 4 (Cont.)

LER NUMBER	EVENT DATE	CAUSE CODE	DESCRIPTION
87-028-00	6/29/87	B	ISOLATIONS OF RWCU SYSTEM ON HIGH DIFFERENTIAL FLOW DUE TO DESIGN DEFICIENCIES
87-029-00	07/18/87	A	T.S. VIOLATION - RHR PUMP DISCHARGE PRESSURE TRANSMITTER INSTRUMENT ROOT VALVE FOUND CLOSED
87-030-00	07/14/87	B	ESF ACTUATION - HIGH PRESSURE COOLANT INJECTION SYSTEM INITIATION WHEN VALVING IN REACTOR VESSEL LEVEL TRANSMITTER
87-031-00	07/14/87	D	UNANTICIPATED INITIATION OF FRVS DURING INSTRUMENTATION MAINTENANCE/TROUBLESHOOTING - PROCEDURAL DEFICIENCY
87-032-00	07/29/87	A	"B" FILTRATION, RECIRCULATION, AND VENTILATION SYSTEM RECIRCULATION FAN FLOW LESS THAN INDICATED FLOW DUE TO INCORRECT CALIBRATION DATA
87-033-00	07/30/87	E	UNANTICIPATED INITIATION OF "E" FRVS RECIRCULATION FAN - MALFUNCTIONING SWITCHES
87-034-00	07/30/87	A	REACTOR SCRAM DUE TO INADVERTENT DE-ENERGIZING OF 120 VAC INVERTER
87-035-00	08/04/87	B	UNANTICIPATED START OF "B" SLCS PUMP
87-036-00	08/04/87	A	LOSS OF CONTROL POWER TO HPCI, RHR & CORE SPRAY LOGIC CIRCUITS
87-037-00	08/16/87	D	REACTOR SCRAM & HIGH PRESSURE COOLANT INJECTION (HPCI) INJECTION
87-038-00	08/18/87	A	FAILURE TO PERFORM A REACTOR LEVEL INSTRUMENTATION SURVEILLANCE WITHIN THE REQUIRED PERIOD
87-039-00	08/29/87	B	REACTOR SCRAM WHILE PERFORMING TURBINE OVERSPEED OPERABILITY TEST DUE TO PRESSURE TRANSIENT IN TURBINE ELECTRO HYDRAULIC CONTROL SYSTEM

TABLE 4 (Cont.)

LER NUMBER	EVENT DATE	CAUSE CODE	DESCRIPTION
87-040-00	09/10/87	A	RWCU SYSTEM ISOLATIONS (2) FOLLOWING RWCU PUMP MAINTENANCE DUE TO NOT ADHERING TO PROCEDURES
87-041-00	09/10/87	A	OVERDUE CHANNEL FUNCTIONAL TEST DUE TO PERSONNEL BEING UNFAMILIAR WITH NEW COMPUTERIZED SCHEDULING SYSTEM
87-042-00	09/20/87	E	INVALID LOSS OF COOLANT ACCIDENT SIGNAL ISOLATION WHEN PERFORMING TEST DUE TO LEAKING INSTRUMENT VALVE
87-043-00	09/22/87	B	RESIDUAL HEAT REMOVAL SYSTEM ISOLATION WHILE PERFORMING SURVEILLANCE TEST DUE TO INSUFFICIENT WORK SPACE - DESIGN DEFICIENCY
87-044-00	09/25/87	A	RESIDUAL HEAT REMOVAL SYSTEM ISOLATION WHILE PERFORMING SURVEILLANCE TEST - CAUSE UNKNOWN
87-045-00	10/07/87	A	PRIMARY CONTAINMENT ISOLATION SYSTEM INITIATION WHEN RESTORING POWER TO LOGIC CABINET DUE TO SPURIOUS LOGIC MODULE INPUTS
87-046-00	10/16/87	D	PRIMARY CONTAINMENT ISOLATION SYSTEM INITIATION WHEN SWAPPING REACTOR PROTECTION SYSTEM BUS POWER DUE TO LACK OF INDICATION - DESIGN DEFICIENCY
87-047-00	10/10/87	E	SAFETY/RELIEF VALVE FAILURE TO CLOSE - SAND BLASTING GRIT IN SOLENOID
87-048-00	11/25/87	D	TRIP OF "B" AND "D" SAFETY AUXILIARIES COOLING SYSTEM PUMPS AND AUTO START OF "A" SACS PUMP DUE TO PROCEDURAL & DESIGN DEFICIENCIES
87-049-00	04/09/87	E	PRIMARY CONTAINMENT LEAK RATE DETERMINED IN EXCESS OF ALLOWABLE (LA) DURING LOCAL LEAK RATE TEST DUE TO COMPONENT MALFUNCTION

TABLE 4 (Cont.)

LER NUMBER	EVENT DATE	CAUSE CODE	DESCRIPTION
87-050-00	12/04/87	A	MISSED SURVEILLANCE OF A MSIV OUTBOARD STEAM SEALING GAS TEST LINE ISOLATION VALVE
87-051-00	12/08/87	B	REACTOR SCRAM CAUSED BY A SPURIOUS SPIKE IN A MAIN STEAM LINE RADIATION MONITOR
87-052-00	12/10/87	B	REACTOR WATER CLEANUP SYSTEM ISOLATION WHEN PRESSURIZING THE "B" FILTER/ DEMINERALIZER DUE TO F/D INLET DESIGN DEFICIENCY
88-001-00	01/06/88	A	MISSED SURVEILLANCE ON LIQUID RADWASTE

TABLE 5

SUMMARY OF LICENSING ACTIVITIES

A. NRR LICENSEE MEETINGS

5/21/87	Safety Parameter Display System Schedular Extension

B. NRR SITE VISITS

5/18-20/87	PM attended Unescorted Access Training Course - and made brief site visit.
7/29/87	PM attended meeting with licensee and Region I personnel to discuss Licensee Radiological Protection Plan. PM also toured plant.
9/9-10/87	PM observed full scale emergency Hope Creek exercise.

C. COMMISSION BRIEFINGS

None

D. SCHEDULAR EXTENSIONS GRANTED

11/24/87	License condition regarding SPDS completion schedule amended to extend schedule.

E. RELIEFS GRANTED

6/9/87	Relief from Section XI of ASME code to delay Leak Tests on 27 valves until first refueling.
12/7/87	Relief from Section XI of ASME code with respect to certain valve and pump testing requirements on an interim basis until review of the revised IST program is completed.

F. EXEMPTIONS GRANTED

6/9/87	Exemption from Appendix J requirement to leak test certain valves - until first refueling outage.

TABLE 5 (Cont.)

SUMMARY OF LICENSING ACTIVITIES

G. LICENSEE AMENDMENTS ISSUED

Date	Amendment No.	Title
12/9/86	1	MCPR (Emergency TS)
2/6/87	2	Radioactive Effluent Monitoring Instrumentation
4/7/87	3	Single Loop Operation
6/9/87	4	Local Leak Rate Test
6/17/87	5	SRV Acoustical Monitor (Emergency TS)
7/7/87	6	Secondary Containment Damper Closure Time
7/7/87	7	Emergency Bus Undervoltage Trip
8/17/87	8	Steamline High Radiation Setpoint
8/25/87		MCPR
9/1/87	10	Revision of TS Section Numbers
11/9/87	11	ATWS TS Changes
11/24/87	12	Emergency Diesel Generator Air Start Receiver
11/24/87	13	SPDS License Condition

H. EMERGENCY CHANGES TO TECHNICAL SPECIFICATIONS

12/9/86	MCPR Revision
6/17/87	SRV Acoustical Monitor (Temporary Change)

I. ORDERS ISSUED

None