

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-272/85-99 AND 50-311/85-99

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

SALEM NUCLEAR GENERATING STATION

ASSESSMENT PERIOD: SEPTEMBER 1, 1984 - SEPTEMBER 30, 1985

BOARD MEETING: NOVEMBER 19, 1985

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I. INTRODUCTION

A. Purpose and Overview

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

An NRC Salem Generation Station SALP Board, composed of the staff members listed below, met on November 19, 1985, to review the collection of performance observations and data to assess the licensee performance 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 Salem Generating Station for the period September 1, 1984 through September 30, 1985. The summary findings and totals reflect the thirteen month assessment period.

B. SALP Board Members

Chairman

R. W. Starostecki, Director, Division of Reactor Projects (DRP)

Members

T. T. Martin, Director, Division of Radiation Safety and Safeguards (DRSS)

S. J. Collins, Chief Reactor Projects BR 2, DRP

L. H. Bettenhausen, Chief, OB, DRS

R. R. Bellamy, Chief, EPRPB (part-time)

S. A. Varga, Chief, NRR-DL

T. J. Kenny, Senior Resident Inspector, Salem

Other Attendees

M. Shanbaky, Chief, PWR RSS, EPRPB (part-time)

D. C. Fisher, Salem Project Manager, NRR

R. W. Borchardt, Resident Inspector, Salem

P. W. Kelley, Resident Inspector, Indian Point 2

D. F. Limroth, Project Engineer, Reactor Projects Section 2B, DRP

C. BACKGROUND

1. Licensee Activities

Unit 1

The unit began this assessment period in cold shutdown (Mode 5) completing the fifth refueling and maintenance outage. On September 7, 1984, the unit entered Mode 3 (Hot Standby) in preparation for unit startup. During rod drop testing, control rod 2B1 could not be raised past the 187 step position and the unit entered Mode 6 (Refueling) on September 17 to reposition two guide tube top hat extensions in the reactor vessel head. After completion of repairs the unit was taken critical on October 13, 1984, for low power physics testing. Low power physics testing was interrupted on two separate occasions because of equipment failures not directly associated with the testing.

On October 22, 1984, the unit was synchronized to the grid, but after completion of the turbine overspeed test, the reactor tripped due to a false pressure signal from the turbine first stage pressure transmitter. On October 23, the unit was returned to service but was forced to operate at reduced power levels while attempting to resolve condenser vacuum leaks and generator stator water problems. Reduced load operation continued until the reactor tripped on November 6 due to a malfunction of the electro-hydraulic control (EHC) system. The unit was returned to service on November 9 but tripped again on November 11 for the same reason. The unit was placed in cold shutdown and repairs were made to the EHC system. The unit was returned to service on November 20 but was limited to 85% power due to concern over the generator stator water coil differential temperature. On December 5, the unit was brought to full power and operated at 100% until a reactor trip occurred on December 23 as a result of a technician error during nuclear instrumentation adjustments. A startup was performed on December 28 but a malfunctioning solenoid on a feedwater system valve caused the unit to trip on December 31.

Following plant restart on January 1, 1985, the unit commenced a continuous run that lasted through the end of the assessment period. The unit operated at full power for the entire period with the exception of short power reductions for surveillance testing and maintenance. This period of continuous operation (273 days as of September 30, 1985) eclipsed the previous Salem continuous run record of 88 days.

Unit 2

The unit began the assessment period at full power but on September 5, 1984 the unit tripped as a result of air intrusion into the feedwater pump suction line. The unit was returned to service on September 7.

On October 4, 1984 a generator differential relay protection actuation caused a reactor trip. Extensive generator damage was discovered during the licensee's investigation and the decision was made to replace the damaged Westinghouse generator with a General Electric generator that was originally scheduled for installation at Hope Creek Unit 2. The outage was also used to perform the core's second refueling. Work performed during this outage included sludge lancing and annulus inspection of the steam generators (SG), SG secondary side inspection, No. 24 SG tube leak repair, service water header repairs, reactor coolant pump seal replacement, 2B and 2C battery replacement, and SG feedwater pump bearing replacement.

The unit entered Mode 3 (hot standby) on March 17, 1985, but was forced to return to cold shutdown on March 22 when the No. 22 Auxiliary Feed Pump was found to be inoperable.

On April 10, 1985 the unit was brought critical and low power physics testing was conducted. From April 10 to May 15 the plant experienced five automatic reactor trips and a number of manual turbine trips which resulted from unrelated causes. The automatic trip signals were initiated due to SG Low Level with steam flow/feed flow mismatch, SG Low-Low Level, low turbine oil pressure, loss of generator excitation and a dropped control rod.

On May 16, 1985, the unit was brought to full power where it remained until June 28, except for one 22 hour period to repair a condenser tube leak. It was shutdown on June 28, 1985 to repair a leaking pressurizer safety valve.

On July 7 and 8, 1985, operator errors resulted in two separate reactor trips during unit startups. The unit was returned to service on July 8. On July 20 the unit was taken out of service to repair two pressurizer system valves. During the approach to criticality on July 21, control rod 2B4 dropped due to a faulty connector. On the subsequent startup the Boron Injection Tank and the Boric Acid Storage Tank boron concentrations were found to be out of specification. A controlled shutdown was initiated and an unusual event declared due to failure to meet a Technical Specification limit. The boron concentrations were returned to an allowable value and the unit started up on July 23.

On August 8, 1985 a reactor trip resulted from a loose lead which caused reactor trip breaker (RTB) A to open during functional testing of RTB B. The unit was returned to service on August 10. The unit was shutdown on August 27 when both component cooling heat exchangers were inoperable. The unit was returned to service on August 29, 1985 and operated at full power until September 21 when a manual reactor trip was initiated due to inability to maintain primary system pressure caused by leakage through the pressurizer spray valve.

The unit operated at 100% power from September 23, 1985 to the end of the assessment period.

Site

A full scale emergency exercise was conducted on October 23, 1984.

The Institute for Nuclear Power Operations conducted an onsite evaluation in May 1985.

A number of site organizational changes have been made including the alignment of Instrumentation and Controls under the Maintenance Manager and Chemistry under the Radiation Protection Manager. Personnel changes have occurred in the positions of Maintenance Manager, Radiation Protection Manager, Operations Manager and Outage Manager.

The licensee is still under the Order which was issued following the ATWS event. During the latter portion of this assessment period, the licensee has aggressively pursued completion of the Action Plan required by the Order. In this program there are basically seven areas; Organization Management, Safety and Compliance Management, Configuration Management, Operations and Operations Support, Quality Assurance, Maintenance and Plant Betterment, and Nuclear Department Services. As a result of management's approach, and in keeping with the Action Plan, the licensee has installed a new Vice President Nuclear who has reorganized the station operations staff, adopted a new philosophy of operations, incorporate management by objective (MBO) for upper management personnel, formulated a Performance Improvement Plan and has committed to the next outage being no more than 60 days in duration. These initiatives will be evaluated during the next assessment period. The changes indicate management's commitment to improving performance in all areas of nuclear power plant operation.

2. NRC ACTIVITIES

Resident inspectors were assigned to the site for the entire assessment period. In April 1985, the Indian Point Unit 2 Senior Resident Inspector was assigned to the site and a new resident inspector was assigned in May 1985.

The NRC conducted a total of 4148 inspection hours during this thirteen month assessment period (equates to 3823 hours on an annual basis). The distribution of man-hours is detailed in Table 2 of this report. Inspection activities included routine and event response resident reviews, observation of the annual emergency exercise, various specialist inspections and a special team inspection of Unit 2 readiness for startup after the refueling and generator replacement outage.

During the assessment period periodic management meetings were held with the licensee to assess the status of program improvements and to discuss indicators of performance.

II. CRITERIA

The following evaluation criteria were applied to each functional area:

1. Management involvement and control in assuring quality.
2. Approach to resolution of technical issues from a safety standpoint.
3. Responsiveness to NRC initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.

To provide consistent evaluation of licensee performance, attributes associated with each criterion and describing the characteristics applicable to Category 1, 2, and 3 performance were applied as discussed in NRC Manual Chapter 0516, Part II and Table 1.

The SALP Board conclusions were categorized as follows:

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 such that a high level of performance with respect to operational safety or construction 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 are reasonably effective such that satisfactory performance with respect to operational safety or construction 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 appeared strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

The SALP Board also assessed each functional area to compare the licensee's performance during the last quarter of the assessment period to the overall performance for the entire SALP period in order to determine the recent trend for each functional area. The trend categories used by the SALP Board are as follows:

Improving: Licensee performance has generally improved over the last quarter of the current SALP assessment period.

Consistent: Licensee performance has remained essentially constant over the last quarter of the current assessment period.

Declining: Licensee performance has generally declined over the last quarter of the current assessment period.

III. SUMMARY OF RESULTS

A. Overall Facility Evaluation

During this assessment period the licensee has accomplished a number of noteworthy milestones including:

- The successful replacement of a Westinghouse generator with a General Electric generator on Unit 2. This project required extensive prior planning and considerable rework of structural and electrical components.
- Continued excellence in the area of primary and secondary water chemistry.
- A continuous run of 273 days on Unit 1 surpassing the previous Salem record of 88 days.
- A significant reduction in man-Rem exposure and an equally significant reduction in solid radiological waste.
- INPO accreditation of all training areas. (This was achieved following completion of the assessment period.)

These accomplishments reflect an improving trend in management.

A number of other areas observed during this assessment have not received adequate attention and increased efforts in these areas is warranted. These areas are:

- The undesirable number of reactor trips.
- The apparent lack of timely and effective engineering support to plant operations.
- Trips and events caused by the lack of procedure adherence.
- The misuse of on-the-spot changes. This has been a repetitive problem, however it is recognized that the licensee has addressed this item and issued a new administrative procedure in this area.

The licensee's management and philosophy of operation has undergone considerable change during the latter portion of this assessment period. While it is not possible to draw a final conclusion on the effectiveness of these changes it appears that they have the potential for significantly improving the licensee's performance. An improved performance has been observed since their implementation. It is noted that this new philosophy, organization and management has yet to be tested by such events as a refueling outage, a full scale

emergency exercise, the reduction of contractor forces with a commitment to perform the maintenance activities by station personnel, the reduction of the security force and its ability to manage security tasks utilizing the newly functional security system. These areas will be observed throughout the coming assessment period to appraise performance of the new organization and effectiveness of newly implemented operational philosophy.

Training

The licensee has maintained a strong commitment to training and has continued to conduct training in all the areas required to operate the facility. Since the end of the assessment period the training program has been accredited by INPO in all areas. This accomplishment, accompanied by the well equipped training facility complete with a Salem specific simulator, indicates management's commitment to training support.

Quality Assurance

Within the functional areas reviewed, the Quality Assurance Department has maintained effective involvement.

The licensee has completed Action Plan Item 2.5.1 pertaining to Quality Assurance as required by the NRC Order issued as a consequence of the ATWS event. A goal of the Action Plan was to improve the QA Department's capability to manage the Salem QA program and included consolidation of QA personnel on site, adequate staffing for the QA Department and "team building" sessions for QA Department personnel. The QA Department was reorganized to establish a group dedicated to the operational phase activities at the Hope Creek facility. The Quality Assurance Control Section was eliminated and its functions assigned to the Audit Group.

Management support in Quality Assurance Department matters is evidenced by adequate department staffing with qualified personnel, endorsing and implementing QA Department recommendations to increase field inspections, demonstrated support of the QA auditing program through the Vice President's approval of the master audit schedule and the requirement for 100 percent QC coverage for reactor trip breaker surveillance.

While the licensee's actions thus far have been consistent with the action plan, the effectiveness of the reorganization and evaluation of management's commitment to the QA program needs to be assessed during future NRC inspections.

B. Facility Performance

<u>Functional Area</u>	<u>Category Last Period</u> (October 1, 1983 - August 31, 1984)	<u>Category This Period</u> (September 1, 1984 - September 30, 1985)	<u>Recent Trend</u>
A. Plant Operations	3	2	Improving
B. Radiological Controls	2	1	Improving
C. Maintenance	2	2	No Basis
D. Surveillance	2	2	Consistent
E. Fire Protection/ Housekeeping	3	2	Improving
F. Emergency Preparedness	2	2	Improving
G. Security and Safeguards	1	1	Consistent
H. Outage Management and Modification Activities	2	2	No Basis
I. Licensing	2	2	Consistent

IV. PERFORMANCE ANALYSIS

A. Plant Operations (45%, 1850 hours)

1. Analysis

The analysis discussed in this section includes plant management, support activities of the Nuclear Department and plant operations. This area was under routine review by the resident and regional based inspectors. One team inspection was conducted to assess the licensee's preparation for Unit 2 startup following an extended outage. Three management meetings were held to discuss the licensee's progress and proposed closeout of the Action Plan which was a result of the Order issued subsequent to the ATWS event on May 6, 1983.

During this assessment period the licensee has shown an improvement in pre-planning as evidenced by the reduction in man-rem and generation of solid radioactive waste produced during the outage (more detail in section B of this performance analysis). This trend has continued during the remainder of the period as well. Corporate management presence is evident at the site, especially during the latter part of this assessment period. Site visits by upper corporate management personnel and dialogue between site and corporate management have been observed by the inspectors. Site engineering support, however, is still not totally supportive.

At morning and outage meetings, observed by the inspectors, the engineering support group frequently does not have answers to problems at hand; they do not have the design change or repair parts on site or do not know where the parts are; and some key personnel are not badged for access to the site. All indications point to a willingness to support plant operations, but only when asked. The initiative to lead in the support activities has not been displayed by this group. The engineering support group seem to have a different set of priorities than the operations group at the station.

The Onsite Safety Review Committee (SORC) and the Onsite Safety Review Group (SRG) have been meeting on an acceptable basis. The SORC conducts required post-trip reviews of all plant trips and concurs in the identified cause and corrective actions to prevent recurrence, prior to the unit startup. The results of the SORC reviews have led to disciplinary actions, retraining of operators and supervisors, and plant improvements. The SRG have been active in conducting in-depth analyses of identified concerns resulting from plant trips and other identified discrepancies. These analyses have been presented to engineering and the Vice President Nuclear for resolution. The resident inspectors have not identified any corrective actions as a result of these analyses to date.

Management has provided adequate guidance on policies and has made sound decisions concerning these policies. More attention on the

part of shift supervisors and plant foremen is required in the area of procedure adherence. There have been a number of occurrences where operating personnel have failed to follow procedures. Records are generally complete with the necessary documentation to evaluate the processes that were accomplished by the procedures.

The licensee's operation of the two units has not been consistent. Unit 1 reactor trips are recorded as having been the lowest for one year since the unit began operation. Unit 2 has been hampered by a greater than desirable number of trips. The total number of trips is fifteen of which five were attributable to operator error, failure to follow procedures, and lack of Shift Supervisor overview. The remaining trips have been attributed to equipment failure. (A summary of the trips and their causes appear in Table 6).

As noted in Figures 1 and 2, the trips occurred during short time durations within the thirteen month SALP rating period displaying the inconsistency of operation. Operations management attention is warranted to correct the cause of and to complete an already started investigation into the cause of and correction of the trips to reduce the total number.

During the latter portion of the assessment period the resident inspectors have been closing out violations and inspector follow items opened by previous inspections and have presented the licensee with a list of items to be closed. The licensee has a clear understanding of the items presented by the inspection and has provided responses. These responses have been generally reasonable and acceptable to the resident inspectors.

There has not been any identified water chemistry problem in the primary or secondary plants during this assessment period. This was due to supervisory attention in the Chemistry Department and an aggressive water chemistry program.

The licensee has had no major violations in plant operations. A trend or pattern could not be identified. The number of violations has decreased compared to past SALP periods with one violation directly attributable to management, two to the Shift Supervisor, two to operators and two to the use of "on-the-spot changes" (OTSC). The licensee has had considerable attention drawn to their practices of OTSC which has led to violations and LERs. The licensee has recently taken steps to address the condition by issuing a completely new policy for incorporating changes into procedures and design changes. The effectiveness of initiative will be addressed in future inspections.

Licensee Event Report (LER) submittals are accurate and timely, however, the licensee occasionally relies on followup reports which are not always as timely as the originals. The licensee has recently embarked on a reduction of modification program and has cancelled

plant betterment modifications that are no longer considered necessary. Some of these modifications were commitments to fixes identified in supplemental LERs. The licensee is currently addressing the issue by a review of past submittals and the cancelled modifications. The quality of LERs is outstanding presenting a clear understanding of the event, its cause, and corrective action taken or committed to be taken.

The licensee has all key positions filled with qualified personnel who have the authority to exercise their positions and understand their responsibility. Staffing appears to be adequate and licensed shift operator excessive overtime is not evident.

The licensee has an aggressive approach to licensed and nuclear plant operator training and retraining. They are not hesitant to utilize the Training Department to rectify self-identified weak areas. In response to events, management has expeditiously provided training and retraining programs in order to enhance operational skills.

2. Conclusion

Rating: Category 2

Trend: Improving

3. Board Recommendations

Licensee

Complete assessment of trip history and make presentation to the NRC.

NRC

With regard to changes instituted as a result of the Order and Action Plan it is recommended that the Order be lifted or rescinded.

B. Radiological Controls (11%, 477 hours)

1. Analysis

In this assessment period, four minor violations were identified. There were no escalated enforcement actions, civil penalties or confirmatory action letters. There were three routine and three reactive inspections of the radiation protection program. The radioactive waste management, transportation, effluent control, and monitoring programs were each inspected in addition to the continual reviews conducted by the resident inspectors.

Total personnel exposure has been reduced by a factor of four and the volume of radwaste by a factor of three. Although additional gains of this magnitude are unlikely, corporate management has targeted further reductions of 15% in each area for 1986. This performance is indicative of aggressive management support of the ALARA and radwaste programs. Management's next emphasis is to reduce the square footage of contaminated area and reduce valve packing leakage to zero.

A Health Physics reorganization created the position of Radiation Protection and Chemistry Manager and several senior supervisor positions including an ALARA Coordinator and Administrative Assistant, yet unfilled, in the Radiation Protection Department. In addition coordination and cooperation between the in-plant and the corporate HP organizations has improved. As a result these changes have provided the opportunity for increased management oversight and provided a larger pool of technically qualified personnel to implement the program.

There is a persistent weakness with regard to the adequacy of review and control of changes to chemistry and HP procedures. To correct the inconsistency with the levels of procedure review the licensee has instituted a new approach to procedures involving two tiers of procedures. The implementation of this solution will be evaluated for effectiveness in the future.

Radiation Protection

Management involvement and control in the radiation protection programs was significantly increased during this period. The Vice President established specific goals for man-rem exposures, cubic feet of radwaste, square footage of contaminated area and number of leaking valves. A computer program initially used to store, analyze and graphically display personnel exposures during outages has been expanded to track performance relative to HP Department goals. HP supervisors have been directed to increase direct observation of work and to interview workers to determine adequacy of briefings and awareness of radiological conditions. The hours of direct supervisory monitoring of work is logged by the computer.

Midway through this period, a reorganization created the position of Manager, Radiation Protection and Chemistry. The position was filled by an experienced and competent individual. Several additional senior and junior supervisory positions were also created. Although not all positions are filled, this reorganization significantly increased the potential for supervisory oversight of activities.

During the assessment period procedures and policies were occasionally misunderstood. As examples: a violation resulted from failure to monitor upper arm radiation exposure; trainees were allowed to conduct routine radiation surveys; a crew performed work in an area posted as a high radiation area without proper authorization; and, workers had a misunderstanding of the "Lapse of Radiological Controls" procedure used to identify radiological control nonconformances, and were reluctant to report problems. All of these issues were satisfactorily resolved by the licensee.

Records are generally complete and well maintained. Records of radiation surveys including maps were readily available for surveys conducted back to 1983. Personnel dosimetry records were up-to-date.

Good practices have been routinely exhibited in the radiation safety program. Corporate policy has been reoriented to clearly require active support of the radiation safety program by all operating departments. A training course in ALARA principles was conducted for design engineers. Excellent control of exposures was achieved during outages by assigning an ALARA coordinator to all major work, using lessons learned from previous performance of similar work (See Section H) and monitoring job progress versus exposure with a computer. Good ALARA practices were exhibited during the recovery of a metal chip reading in excess of 1000 R/HR on contact in the reactor cavity. The personnel dosimetry facility is designed to be operational during any emergency. Industry accreditation (NVLAP) of the dosimetry program was obtained. Analysis of fluctuating environmental sample data was technically sound and indicated a thorough review of routine data. The procedures and facilities to calibrate and maintain survey instruments were found to be good. The controls of potentially contaminated tools were increased by a policy requiring additional surveys prior to removal from the site.

A well defined training program has been implemented with dedicated resources. The respiratory protection training program was significantly improved and expanded as were the other general employee training classes, and the licensee achieved industry (INPO) certification. Classroom instructors were observed in plant reviewing qualification progress of HP technicians-in-training. These observations are the licensee's followup to training with regard to the trainees completing their qualification cards which are prerequisite to qualification as radiation control technicians. The inspector observed that as prospective technicians receive the signatures they are deemed qualified to perform the evolution.

Radioactive Waste Management and Transportation

Although the level of management assigned to provide oversight to the radwaste program has been low, performance has been excellent. By carefully recording and analyzing the waste output, the licensee was able to control and eliminate large volumes of dry active waste. Current generation of approximately 11,000 cubic feet per year is well below the industry average. Pilot studies with a new pressurized resin bed have produced similar reductions in volume of resin expended.

The licensee is providing additional training for auditors which has enhanced the quality control oversight of radwaste shipments. This is provided in each step of the process rather than only prior to shipment. The segregation, packing and shipment of dry active waste consistently exceeds regulatory requirements. The annual audits of these activities has not reached the same level of performance.

Records of waste disposal are complete, well maintained and contain extra detailed information that the licensee effectively utilizes. A computer program is used for dose rate to curie conversions and files are frequently updated with waste stream analysis data.

A training program has been implemented for the radwaste operation supervisors and workers. This program has been particularly effective for QC inspectors.

Effluent Control and Monitoring

In the water treatment program area within the radiological effluents technical specifications, during the startup phase of the new systems, responsibility for the effluent control and monitoring program was shared by the Operational Test Group (OTG) and the Chemistry Departments. Both departments were cited with minor violations for apparent inattention to procedures. The OTG had revised testing procedures without obtaining the required post-change reviews. The Chemistry Department had failed to requalify the Chemistry Technical Assistant as required by training procedures. Since the violations occurred this new equipment has been adequately tested and is now under the control of the Chemistry Department. The OTG is no longer a part of the organization at Salem.

Inadequate control of procedure changes was also demonstrated when a new waste gas decay tank sample point was actually providing samples of clean air. Supporting records confirmed that no discharge limits were exceeded during this period.

Records are generally complete; however, the results of tests of the Fuel Handling Area air cleaning systems could not be located. Records of laboratory tests of charcoal for methyl iodine removal did not provide the date of the test.

Inspection reviews indicate that controls and oversight are adequate to ensure that effluent releases are within Technical Specifications. Performance in these areas was weaker than other areas within the combined HP/Chemistry department. Since the Chemistry Department has assumed complete control of effluent systems this area has improved. Additional inspections will be necessary to assess the changes within the Health Physics and Chemistry Department in light of proposed program change and new department alignment, which has occurred during the latter portion of this assessment period.

2. Conclusion

Rating: Category 1

Trend: Improving

3. Board Recommendation

Licensee

Complete staffing initiatives. Monitor and evaluate procedure change mechanism.

NRC

During subsequent inspections conduct QA/QC overview inspection.

C. Maintenance (4%, 141 hours)

1. Analysis

During this assessment period, routine reviews of corrective maintenance and one specialist inspection were conducted by Region I. The specialist inspection was to assess the licensee's training in the areas of Maintenance, I&C, Electrical, and Mechanical. The maintenance area was also inspected during the closeout of items that had been opened during previous inspections. A programmatic review of preventative maintenance has not been conducted during this assessment period.

Management involvement has improved and the department has benefited from the increased attention. Prior planning and assignment of priorities and responsibilities through procedures and new programs have decreased the number of outstanding work orders since the last SALP period. Contractor personnel who, in the past were usually involved in the repair and installation of equipment, were removed from the site during this assessment period and station personnel are performing their own maintenance. Other indications of maintenance improvements are the institution of a consolidated Master Equipment List, a work order tracking system and further development of the Nuclear Plant Reliability Data System (NPRDS).

The records reviewed by the inspectors are well controlled and well documented. The records which document the performance of maintenance and training are not stored in a manner which makes them easily retrievable. Sometimes records are not readily available for review by the inspectors. This could hamper engineering in the review of work performed by the Maintenance Department in order to make correct assessment of the maintenance work performed.

The licensee has further committed to upgrade the maintenance program at the site and has proposed a managed maintenance program to facilitate the planning, scheduling and analysis of maintenance work activities. The manager of the new Planning Department has been named and the department will be directly responsible to the Station Manager. This department will be responsible for planning and scheduling of all maintenance and outage work. This initiative is still in its early stages of development and its effectiveness has not been assessed.

The licensee's approach to regulatory issues is technically sound and the responses to regulatory concerns are timely and, generally, acceptable to the inspectors.

No items of non-compliance were identified in the maintenance area. The licensee has been addressing items that were identified in previous rating periods and the corrective actions appear to be effective as experienced by the reduction in identified concerns by the

inspectors. The department has an effective means of reporting problems and ongoing events through the morning meetings. No reportable issues were identified during this rating period.

The licensee appears to have adequate management staffing to administer the maintenance program. The management positions are clearly identified with authorities and responsibilities defined. At this time it is difficult to assess whether the staff is capable of supporting the repair and disposition of the maintenance work requests that are generated by the other departments. The backlog of maintenance work requests was beginning to increase at the end of the assessment period apparently due to increased management attention to plant betterment which has generated more maintenance work requests (MWRs) than normal, and the decrease in contractor personnel.

The Maintenance Department has an aggressive training and retraining program that is administered by the Training Department. The program is well defined and implemented with adequate resources. The training facility is one of the best in Region I with equipment that is a duplicate of that in the plant. The training and qualification program combined with good procedures and adequate staffing, has led to an improved effective maintenance program.

The assessment of this functional area is based almost exclusively on day-to-day observations by the resident inspectors. A programmatic inspection in this area is planned for the coming SALP assessment period; however, none was performed during this period. Limited inspection in this functional area complicated by reassignment of resident inspectors provides no basis for assessing a trend.

2. Conclusion

Rating: 2

Trend: No Basis

3. Board Recommendations

Licensee

Continue to develop preventative and corrective maintenance program as committed to in the Salem Action Plan.

NRC

Conduct review of licensee maintenance program and its implementation.

D. Surveillance (8%, 341 hours)

1. Analysis

This area was under routine review and during this assessment period three specialist inspections were conducted in the following areas: Surveillance testing, Reactor Coolant System (RCS) leakage measurement program, and In-service Inspection (ISI).

The surveillance tests are well documented and utilize detailed procedures, instructions, test forms, and acceptance criteria. Management involvement is evident by the immediate and long term actions that are taken in response to identified issues. For example, surveillance identified equipment malfunctions are usually promptly corrected, and Reactor Trip Breaker measurements continue to receive a high level of management attention. During this assessment period one surveillance was missed. Overall, the staff, including technicians, plant engineers and QA personnel are knowledgeable, responsible and well trained.

Several areas of concern were identified during this assessment period. During surveillance testing, technicians' lack of strict adherence to procedures was the direct cause of one violation and three reactor trips. Two violations were issued in the area of Reactor Coolant System (RCS) leak rate detection resulting from the licensee's incorrect interpretation of RCS leakage classification. Both of these areas have been addressed by management and the actions taken have corrected the concerns. However, adequate time has not elapsed for the inspectors to properly assess the long-term results of management's actions to enhance procedure compliance.

The review of the in-service inspection program of Salem Unit 2 indicated that management's involvement and control to assure quality was adequate, especially in the area of steam generator tube examinations and associated actions. This was demonstrated by the licensee's actions to plug certain steam generator tubes that were not defective by the Code but had the potential to degrade primary system integrity. There is a need for more effective staff training for review of ISI vendor supplied data. Several instances were identified where ultrasonic examination data was incorrectly plotted and evaluations were not based on all of the available information.

The licensee's staffing is adequate and utilizes qualified personnel.

The I&C Group usually performs the bulk of the surveillance testing in conjunction with the Operations Department. During the latter portion of this assessment period the I&C Group has been placed in the Maintenance Department. This change was implemented by the licensee in order to align all maintenance (I&C, Electrical and Mechanical) under the same manager. The impact of this change will be addressed in the next SALP rating period.

2. Conclusion

Rating: Category 2

Trend: Consistent

3. Board Recommendations

None

E. Fire Protection/Housekeeping (4%, 177 hours)

1. Analysis

The areas of fire protection and housekeeping were under routine review during this assessment period. Two fire protection/prevention specialist inspections were conducted.

A significant improvement in both management attention and performance has been seen in these areas during the second half of this assessment period. Although improvements are still needed, a working program appears to be in place. The formation of a Site Protection Department has resulted in a more aggressive approach toward resolving a number of long-term problems. In addition, the incorporation of full time trained firemen has relieved the Operations Department of fire brigade team responsibilities. This also resulted in more meaningful fire brigade team training.

Both units have been in the Technical Specification action statement for degraded fire barrier penetrations for almost four years; however, the fire barriers were found to have deteriorated further since the last assessment period. The further degradation of fire barriers, including damage to a fire damper and ventilation duct fire protective wrap, was cited as a violation. Although unsealed penetrations in the auxiliary building stairwells were identified to the licensee as a problem in January 1984, no corrective actions had been implemented as of December 1984. Repairs and replacement of the fire proofing of steel columns was negated by the fact that the fire proofing was redamaged almost immediately by work crews transporting equipment.

As the assessment period continued, increased management attention became evident in the area of fire barrier integrity. A consultant was hired and an aggressive program to repair or replace all degraded fire doors was initiated. Although the licensee was still in the fire barrier action statement at the end of the assessment period, the items remaining to correct were relatively minor.

The licensee has not exhibited the same initiative in response to concerns and unresolved items identified by the NRC during the safe shutdown inspection. Items such as the deficiencies in the fire protection features, sprinkler system and detection, have not been resolved.

The licensee's commitment toward improving the level of general plant cleanliness and the results achieved to date is noteworthy. The effort expended to make these improvements was significant and has resulted in improved performance in this area. The removal of a large number of contractor personnel has increased the PSE&G employee's sense of pride and ownership in the facility which has resulted in more attention to good housekeeping practices.

The licensee has undertaken a number of housekeeping improvement programs including reducing the number and size of contaminated areas and coating floor surfaces with unit specific colors. In addition to improving the unit's appearance, the painting of equipment and surfaces with a unit specific color is intended to reduce wrong unit errors.

2. Conclusion

Rating: Category 2

Trend: Improving

3. Board Recommendations

Licensee

Meet with NRC to assess implementation of resolutions to longstanding fire protection issues.

NRC

None

F. Emergency Preparedness (20%, 845 hours)

1. Analysis

This assessment is primarily based on NRC team inspections of the annual emergency exercise conducted on October 23, 1984, and two special inspections on November 5-9, 1984, and July 8-11, 1985, relating specifically to the followup of major deficiencies identified during and subsequent to the exercise.

During the October 23, 1984, emergency exercise, the NRC inspection team identified a number of deficiencies which were indicative of a significant breakdown in Emergency Preparedness program effectiveness. As a result, a meeting was held on October 31, 1984, at NRC/RI with PSE&G and NRC management. PSE&G was given the opportunity at this meeting to present additional information that would assist the NRC in evaluating the exercise. PSE&G was informed that a followup inspection would be performed to evaluate the additional information and to determine the underlying causes of the major deficiencies identified during the annual exercise.

During the November 5-9, 1984 team inspection, additional violations of NRC requirements were identified. These violations involved deficiencies in the training of PSE&G personnel and failure by PSE&G management to correct deficiencies in the Emergency Preparedness program. These deficiencies had been previously identified during quality assurance audits and emergency drills by the licensee prior to the October 23, 1984 drill but were not acted upon until NRC inspection activities identified the same deficiencies.

The licensee presented a program of proposed corrective actions to the NRC during an enforcement conference on January 24, 1985. Although the NRC recognized that these corrective actions, if aggressively implemented, should preclude recurrence of the violations, it was felt that the failure to promptly correct licensee-identified deficiencies in the first instance represented a lack of management involvement to the emergency preparedness program. As a result, a civil penalty was issued to PSE&G in the amount of \$50,000 for the violations identified.

Since January 1985, the licensee has made significant progress in resolving the deficiencies identified in October 1984 and in upgrading the overall emergency preparedness program. Management involvement has been strong, demonstrating a renewed commitment toward maintaining a high level of emergency response capability. Evidence of these efforts was verified during a team inspection on July 8-11, 1985. As a result of this inspection, all of the deficiencies which resulted in the civil penalty were closed by the inspection team. The training program has been substantially improved and tracking systems have been set up to keep track of deficiencies noted (by both

QA and within the EP program) and actions taken to correct them. These tracking systems are presented to high levels of management.

Also contributing to the dramatic improvement in the Emergency Preparedness program have been recent organizational changes which have provided strong management for both the Emergency Preparedness Department specifically and for the plant as a whole. Performance improvements in key EP positions now represent a commitment by PSE&G to maintain the EP program at a high level of effectiveness.

2. Conclusion

Rating: Category 2

Trend: Improving

3. Board Recommendations

None

G. Security and Safeguards (4%, 158 hours)

1. Analysis

These areas were under continual review during this assessment period. There were one special and two routine unannounced physical protection inspections conducted.

Escalated enforcement action (Severity Level III - no civil penalty) was taken as a result of a firearm being introduced into the plant protected area when a member of the security force was negligent in following procedures. The lessons learned from the event were promptly communicated to the security force and incorporated into the security force training program. The licensee's corrective actions were very responsive and prompt.

Allegation followup resulted in a violation identified by the licensee as a result of its followup of the allegation which could not be proven or disproved. However, the licensee treated the allegation as true and took appropriate actions to rectify the alleged matter and to prevent further occurrence.

The licensee submitted one event report pursuant to 10 CFR 73.71(c) during the assessment period. The description of the event was clear and the corrective actions taken were adequate and prompt.

Corporate involvement in the program was evidenced by the expenditure of a significant amount of capital and human resources to upgrade and improve the existing security program for Salem and to provide for the incorporation of the Hope Creek site into the program. Improvements included construction of a new Access Control Facility, installation of a new integrated security computer system and associated hardware, computerized access control devices, state-of-the-art closed circuit television systems and new personnel search equipment. These improvements and the elimination of non-security related duties for the security force enabled the licensee to reduce the security force by 50%, thus removing the previous extensive reliance on human elements.

The licensee's onsite security staff was reorganized during this assessment period to provide better oversight of the contract security force and also to provide for the incorporation of Hope Creek. Of significance was the addition of licensee security professionals to each shift to monitor contractor performance. Several instances of inattention to duty on the part of members of the contractor security force were identified during NRC inspections. In the middle of this assessment period, the licensee had detected some decline in its monitoring of, and the contractor's supervision of the security force. This recent initiative is expected to detect performance lapses as they occur such that they do not become a problem. The licensee's staff remains composed of well-qualified and experienced professional

personnel who appear to discharge their assigned responsibilities effectively as evidenced by the overall quality of the program implementation found during inspections.

During this assessment period, the onsite contractor management and members of the security force were confronted with security program changes and improvements that created extreme pressures and extraordinary working conditions. The security force responded in an excellent and professional manner to these adversities indicating a dedication to the job by all members of the security force.

The training and requalification program remained well defined and was administered in a professional manner by highly qualified instructors. No adverse inspection findings could be attributed to the training program.

2. Conclusion

Rating: Category 1

Trend: Consistent

3. Board Recommendations

None

H. Outage Management and Modification Activities (4%, 139 hours)

1. Analysis

This assessment period began with Unit 1 in a refueling outage. Seven days later the unit began a startup and encountered difficulties during rod drop testing (See below). Later in the period Unit 2 began an outage to refuel the reactor and to replace the main generator which had failed during operation. This area was under continual review and a special team inspection was conducted prior to the startup of Unit 2.

Management attention and prior planning were poorly conducted during the reassembly of the reactor following the split pin modification that was conducted during the outage on Unit 1. During the startup of the unit several rods became stuck and had to be driven back into the core. The subsequent disassembly of the reactor found that two guide tube extensions in the top hat assembly area were rotated 90 degrees from the correct position. During reassembly of the reactor a core exit thermocouple guide tube was bent for a second time during this outage.

Management attention and prior planning were improved during the outage on Unit 2; however, the same design changes and refueling work packages were not performed as in Unit 1. The result was an outage of shorter duration with less man-rem expended during the performance of the work packages. Most compared tasks were completed with less than the projected man-rem exposure and the overall total for man-rem expended was less than projected for the entire outage.

The station experienced less outage time on the units during this assessment period than any other period during the life of the station. The outages, illustrated in table 6 of this report, were relatively short in duration and prior planning on the part of management was evident. The work performed during these outages was controlled and well documented.

Three violations were attributable to outage management and modification activities. The violations were improper use of use of scaffolding in the vicinity of Class I seismic structures, procedures which did not detail malfunction and shelf life of expansion joints, and failure to adequately torque seismic anchors in the installation of a Class I system. These violations have been corrected by the licensee. As a result of one of the licensee resolutions, the station has established a structured program for the use and placement of scaffolding so that its presence does not impact on safety related equipment in the event of a seismic occurrence.

During the assessment period the licensee completed modifications and adjustments to the condensate and feedwater system of Unit 2 which has corrected previously identified feedwater instabilities, noted

during previous assessment periods, caused by low suction pressure which led to plant trips. The correction was to install higher head condensate pumps which eliminated the feedwater problems. Subsequent testing and Unit 2 operation has demonstrated that no other repairs are necessary and the feedwater low suction pressure problems have been corrected.

The licensee has recently changed the staffing in the area of planning. The Planning Department now reports directly to station management. This is seen as a strong move on the part of management to have more control over planning and outage related activities. This department will be evaluated in more depth as the department assumes more responsibilities and especially during the next outage.

Overall, the outages and outage related activities have improved during this assessment period with more emphasis by station management being placed on pre-planning and quality work. Licensee initiatives have resulted in prior planning meetings and work packages have been issued for the Unit 1 60-day outage planned for February 1986.

2. Conclusion

Rating: Category 2

Trend: No Basis. Recent indications of trend, as indicated by outage on Unit 1 indicate improvements in this functional area.

3. Board Recommendations

None

I. Licensing Activities (% NA)

1. Analysis

During this rating period the licensee's management demonstrated active participation in licensing activities and kept abreast of current and anticipated licensing actions. The management's involvement in licensing activities generally assured a timely response to requirements of the Commission. The licensee's management generally exercised good control over its internal activities and its contractors and maintained effective communication with the NRC staff. In anticipation of long review times for several amendment change requests dealing with their next refueling shutdown, the licensee held advance meetings with the NRC staff to try to identify and smooth out review problem areas that might arise. Although the licensee usually met licensing schedules, response times where the licensee was requested to supply additional information in order to process "Sholly" notices sometimes took too long. In several instances, these delays caused amendments to be processed out of order, resulting in further delays to correct the situation to assure that the correct Technical Specification pages were put in place. PSE&G management has been made aware of these instances and efforts are being made to cure the situation. Further, there has been no need for emergency or expedited issuance of amendments, indicative of good planning and management of licensing activities.

The interaction of the licensee with the NRC staff resulted in good understanding of safety issues. In the usual case, satisfactory technical approaches were taken by the licensee's technical staff toward their resolution. Adequate conservatism was exhibited in relation to significant safety issues on a routine bases. The licensee's aggressive approach to the technical issues has been demonstrated by the number and complexity of the licensing actions completed during this period.

There were several issues where the licensee initiatives resulted in different technical approach than NRC guidance had provided. Resolution of the issues was obtained through compromise by a series of follow-up discussions and additional information requests. In these cases, the staff reviewers felt that the technical disagreement could have been avoided by timely communications with the staff.

The licensee's commitments to meeting schedules were usually on time. For those that were late, the licensee provided adequate advance notice to the Project Manager.

The licensee was aggressive in pursuing closeout of open licensing issues. Licensee personnel are in constant open dialog with the NRC Project Manager; verbal commitments were always adhered to and followed up in writing.

There are no long standing regulatory issues attributable to the licensee.

The licensee has a licensing staff which appears to be sufficient to provide adequate and timely responses. There appears to be an adequate understanding of the regulatory requirements, technical issues and adherence to procedures. However, there were instances where delays in processing time of actions did occur. The licensee is currently trying to correct these situations. The licensee further supplements his licensing capability by active participation in nuclear industry groups and committees.

2. Conclusion

Rating: Category 2

Trend: Consistent

3. Board Recommendations

None

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Event Reports

Tabular Listing

1. Type of Events:	Unit 1	Unit 2	Total
A. Personnel Error	7	7	14
B. Design/Man./Constr. Install.	9	6	15
C. External Cause			
D. Defective Procedures	1	2	3
E. Component Failure	1	9	10
X. Other	<u>6</u>	<u>5</u>	<u>11</u>
Total	24	29	53

Licensee Event Reports Reviewed.

Unit 1: Reports 84-17 through 84-29, 85-01 through 85-11

Unit 2: Reports 84-18 through 84-25, 85-01 through 85-20

2. Causal Analysis of LERs

- a. Four incidences of failure to follow procedures; two by operators, and two by instrument technicians contributed to four of the LERs
- b. Three failures of service water components such as vent and drain leaks contributed to three events that required reporting to the NRC. The licensee currently has established a study group to assess why these failures continue to occur.

B. Investigative Activities

None - Miscellaneous allegations were examined during routine inspections.

C. Escalated Enforcement

The following violations resulted in escalated enforcement actions;

1. Two Level III violations in emergency preparedness resulted in a \$50,000 civil penalty.
2. One Level III violation in security resulted in no civil penalty.

D. Management Conferences

1. Management Meetings on November 16, 1984, April 19, 1985, and September 25, 1985, to discuss the development and close out of the PSE&G Action Plan for improvement of Nuclear Department Operations.
2. Enforcement Conference on January 24, 1985, to discuss violations and identified deficiencies which represented a significant programmatic weakness in the emergency preparedness program.

TABLE 1

TABULAR LISTING OF LERs BY FUNCTIONAL AREA
SALEM NUCLEAR GENERATING STATION - UNITS 1 AND 2

Area	Cause Code						Total
	A	B	C	D	E	X	
A. Plant Operations	9	5		2	1	3	20
B. Radiological Controls	1						1
C. Maintenance							0
D. Surveillance	4	2			1		7
E. Fire Protection/ Housekeeping							0
F. Emergency Preparedness							0
G. Security and Safeguards							0
H. Outage Management and Modification Activities		2		1			3
I. Licensing Activities							0
J. Other		6			8	8	22
Totals	14	15		3	10	11	53

Cause Codes

- A. Personnel Error
- B. Design, Manufacturing, Construction, or Installation Error
- C. External Cause
- D. Defective Procedures
- E. Component Failure
- X. Other

TABLE 2

INSPECTION HOURS SUMMARY (9/1/84 - 9/30/85)SALEM NUCLEAR GENERATING STATION

	<u>Hours</u>	<u>% Of Time</u>
A. Plant Operations.....	1850	45
B. Radiological Controls.....	477	11
C. Maintenance.....	141	4
D. Surveillance.....	341	8
E. Fire Protection/Housekeeping.....	177	4
F. Emergency Preparedness.....	845	20
G. Security and Safeguards.....	158	4
H. Outage Management and Modification Activities	139	4
I. Licensing Activities.....	<u>N/A</u>	<u>N/A</u>
Total	4148	100

TABLE 3

ENFORCEMENT SUMMARY (9/1/84 - 9/30/85)SALEM NUCLEAR GENERATING STATION UNITS 1 & 2A. Number and Severity Level of Violations

<u>Severity Level</u>	<u>No</u>
Severity Level I	0
Severity Level II	0
Severity Level III	3
Severity Level IV	16
Severity Level V	<u>4</u>
Total	23

B. Violations vs. Functional Area

<u>FUNCTIONAL AREAS</u>	<u>Severity Levels</u>					<u>DEV</u>	<u>TOTALS</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>		
A. Plant Operations				8			8
B. Radiological Controls				1	3		4
C. Maintenance							0
D. Surveillance				1			1
E. Fire Protection & Housekeeping				1			1
F. Emergency Preparedness			2				2
G. Security and Safeguards			1	2	1		4
H. Outage Management and Modification Activities				3			3
I. Licensing Activities							0
<u>Violation and Deviation Totals:</u>			3	16	4		23

TABLE 3 (CONT'D)

C. Summary - Enforcement Data

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Req.</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
Combined Inspection 84-32/84-32	8/14/84- 9/24/84	TS 6.8.1	IV	Surveil- lance	Failure to follow procedures while performing surveillance on Main Turbine.
		TS 6.11	V	Rad. Con.	Failure to comply with radiological posting.
Combined Inspection 84-34/84-34	9/17-21/84	TS 6.5.1.6	IV	OPS.	Failure to perform a SORC review in a timely manner.
		TS 6.4	V	Rad. Con.	Failure to provide required requalification training for Chemistry Technician in a timely manner.
50-272/ 84-35	9/18-24-84	10CFR20.202	IV	Rad. Con.	Failure to supply proper radiological monitoring equipment.
Combined Inspections 84-39/84-38 84-43/84-41	10/22-26/84 10/31/84 11/5-9/84 11/30/84	10CFR50.47 (b)(15)	III	Emerg. Plan.	Certain personnel did not receive adequate training for Emergency Planning.
		10CFR50.47 (b)(14)	III	Emerg. Plan.	Prompt corrective actions were not taken on identified deficiencies

TABLE 3 (CONT'D)

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Req.</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
Combined Inspection 84-42/84-42	10/27/84 - 12/14/84	10CFR50.59 (b)	IV	Outage Man.Mods.	Improper use of scaffolding in the close proximity of Class I seismic structures.
		10CFR50 APP. B Criterion V	IV	Outage Man.Mods.	Procedures did not provide adequate details to install expansion joints in service water.
Combined Inspection 84-46/84-46	12/17-21/84	TS 3.7.11	IV	Fire Prot.	Fire barriers and fire doors were found non-functional.
Combined Inspection 84-47/84-47	12/15/84 - 1/22/85	TS 6.11	V	Rad. Con.	No record of survey results.
		TS 6.8.1	IV	OPS.	Began maintenance on one boric acid transfer pump heat tracing while the other train was inoperable rendering both inoperable.
Combined Inspection 85-01/85-04	1/21/85 2/4-7/85	TS 6.8	IV	OPS.	Improperly implemented primary leak rate calculations in accordance with NRC rules and guidelines.
Combined Inspection 85-02/85-01	1/8/85	Security Plan	III	Security	Vehicle entered protected area with unauthorized item in a suitcase (No Civil Penalty because of mitigating conditions)

TABLE 3 (CONT'D)

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Req.</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
Combined Inspection 85-03/85-03	1/23/85 - 3/1/85	TS 3.3.3.1 TS 3.9.9	IV	OPS.	Purging and pressure relieving containment without proper radiological instrumentation and isolation protection.
Combined Inspection 85-07/85-07	3/2/85 - 4/5/85	TS 6.8	IV	OPS.	Improper change to a procedure making it inconsistent with Technical Specifications.
50-311/85-08	3/21-22/84 3/25-29/85	10CFR50 APP B Criterion II	IV	Man.Mods.	Failure to adequately torque seismic anchors in installation of a Class I system.
Combined Inspection 85-10/85-10	4/8-11/85	Security Plan	IV	Security	Not enough illumination at required areas of the site.
		Security Plan	IV	Security	Security officer was observed not properly manning his post.
Combined Inspection 85-12/85-13	5/7-31/85	Security Plan	V	Security	Licensee identified failure to meet requirements of Training and Qualification Plan.
Combined Inspection 85-15/85-17	7/1-31/85	TS 6.8.3	IV	Ops.	Improper sampling of waste gas decay tanks due to improperly implemented on-the-spot change.

TABLE 3 (CONT'D)

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Req.</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
		TS 6.8.1	IV	Ops.	Unit trip due to operator failure to follow procedure.
Combined Inspection 85-20/85-22	9/1-30/85	TS 6.8	IV	Ops.	Improperly implemented primary leak rate calculations in accordance with NRC rules and guidelines.

TABLE 4

INSPECTION REPORT ACTIVITIES (9/1/84 - 9/30/85)SALEM NUCLEAR GENERATING STATION

<u>Report/Dates</u>		<u>Inspector</u>	<u>Hours</u>	<u>Areas Inspected</u>
<u>Unit 1</u>	<u>Unit 2</u>			
84-32 9/1-24/84	84-32	Resident	215	Routine, daily inspections and unscheduled backshift inspections.
84-33	84-33			Cancelled
84-34 9/17-21/84	84-34	Specialist	36	Routine, unannounced inspection of the licensee's radioactive waste management program.
84-35 9/18-24/84	---	Specialist	48	Special, announced safety inspection to review control of work in the reactor head area and to investigate an allegation regarding improper exposure monitoring and record keeping.
84-36 9/25-10/26/84	84-35	Resident	191	Routine, daily inspections and unscheduled backshift inspections.
84-37 10/1/83-8/31/84	84-36		SALP	
84-38 10/15-19/84	84-37	Specialist	69	Unannounced inspection by two region-based inspectors to determine effectiveness of licensee's non-licensed training program.

TABLE 4 (CONTD)

<u>Report/Dates</u>	<u>Inspector</u>	<u>Hours</u>	<u>Areas Inspected</u>
84-39 84-38 84-43 84-41 10/22-26/84 11/5-9/84	Specialist	655	Routine observation of annual emergency exercise and followup inspection of emergency preparedness program.
84-40 84-39 10/22-26/84	Specialist	98	Routine, unannounced safety inspection of radiation safety program.
84-41 84-40 10/29 - 11/2/84	Specialist		Special Team Inspection
84-42 84-42 10/27 - 11/30/84	Resident	264	Routine, daily inspections and unscheduled backshift inspections.
84-43 84-41	This Report Combined With 272/84-39; 311/84-38		
84-44 84-43 11/16/84	Resident		Management Meeting to discuss status and details of PSE&G Action Plan for improvement of Nuclear Department operations.
84-45 84-44 11/26-30/84	Specialist	208	Special announced inspection of the implementation of the licensee's commitments relative to post-accident sampling and monitoring.
---- 84-45 12/10-21/84	Specialist	44	Routine, unannounced inspection of ISI activities.
84-46 84-46 12/17-21/84	Specialist	70	Routine, unannounced inspection of the Fire Protection/Prevention Program.

TABLE 4 (CONTD)

<u>Report/Dates</u>	<u>Inspector</u>	<u>Hours</u>	<u>Areas Inspected</u>
84-47 84-47 12/15/84 - 1/22/85	Resident	198	Routine, daily inspections and unscheduled backshift inspections.
85-01 85-04 1/21-25/84 2/4-7/85	Specialist	162	Routine, unannounced inspection of the Reactor Coolant System leakage measurement program.
85-02 85-01 1/8/85	Specialist	4	Special, unannounced physical protection inspection.
85-03 85-03 1/23 - 2/22/85	Resident	194	Routine, daily inspections and unscheduled backshift inspections.
85-04 85-04			Cancelled
85-05 85-05 2/25/85	Specialist	9	Special, unannounced inspection to review concerns expressed by workers.
85-06 85-06			Cancelled
85-07 85-07 3/2 - 4/5/85	Resident	156	Routine, daily inspections and unscheduled backshift inspections.
----- 85-08 3/21-29/85	Resident	116	Special Team Inspection of selected design change requests.
85-08 85-09 4/1-4/85	Specialist	41	Routine, announced inspection to follow-up unresolved items relating to Fire Protection/Prevention Program.

TABLE 4 (CONTD)

<u>Report/Dates</u>	<u>Inspector</u>	<u>Hours</u>	<u>Areas Inspected</u>
85-09 85-11 4/6 - 5/6/85	Resident	82	Routine, daily inspections and unscheduled backshift inspections.
85-10 85-10 4/8-11/85	Specialist	37	Routine, unannounced physical security inspection.
85-11 85-14 4/19/85	Specialist	10	Management meeting to discuss action plan for improvement of Nuclear department.
----- 85-12 4/15-19/85	Specialist	80	Routine, unannounced inspection of the radiation safety program.
85-12 85-13 5/7-31/85	Resident	130	Routine, daily inspections and unscheduled backshift inspections.
85-13 85-15 6/1-30/85	Resident	147	Routine, daily inspections and unscheduled backshift inspections.
85-14 85-16 6/24-28/85	Specialist	92	Routine, unannounced inspection of Quality Assurance program.
85-15 85-17 7/1-31/85	Resident	182	Routine, daily inspections and unscheduled backshift inspections.
85-16 85-18	Specialist	140	Special, announced inspection of the Emergency Preparedness Program.

TABLE 4 (CONTD)

<u>Report/Dates</u>	<u>Inspector</u>	<u>Hours</u>	<u>Areas Inspected</u>
85-17 85-19 7/3/85	Specialist	12	Special reactive inspection to review licensee reported problems with waste gas tank sampling and control of contaminated tools.
85-18 85-20 8/1-31/85	Resident	177	Routine, daily inspections and unscheduled backshift inspections.
85-19 85-21 8/19-23/85	Specialist	37	Routine, unannounced inspection of physical protection inspection.
85-20 85-22 9/1-30/85	Resident	190	Routine, daily inspections and unscheduled backshift inspections.
85-21 85-23 9/9-13/85	Specialist	44	Routine, unannounced inspection of the radiation safety program.
85-22 85-25 9/25/85	Resident	10	Management meeting to discuss status and closeout of PSE&G Action Plan.

T5-1

TABLE 5

LER SYNOPSIS (9/1/84 - 9/30/85)

SALEM GENERATING STATION

UNIT 1

<u>LER Number</u>	<u>Event Date</u>	<u>Cause Code</u>	<u>Description</u>
84-17	7/16/84	X	Foreign Material in Charging Pump Suction Line
84-18	7/13/84	A	Inadvertent Safety Injection Signal
84-19	8/29/84	X	Impingement of Sea Turtle in the Circulating Water Intake
84-20	8/22/84	B	Containment Air Locks - Design Deficiency
84-21	10/14/84	B	Containment Isolation Valve ICC131 Inoperable. (Unit Shutdown) Inadvertent closure caused by pressure transient when service water pump was started.
84-22	10/19/84	A	Containment Isolation Valves 1CV68 and 1CV69 Inoperable. Operator judgement in error by using a valve that was thought to have been tested properly.
84-23	10/22/84	B	Reactor Trip From 8% While Performing Turbine Overspeed Test
84-24	10/20/84	X	Engineered Safety Feature Actuation System Feedwater Isolation Malfunction
84-25	11/6/84	E	Reactor Trips From 91% and 93% Due to Low-Low Level No. 13 Steam Generator
84-26	11/7/84	B	Containment Isolation Valve 11MS18 Inoperable. Valve leaking by.

TABLE 5 (CONTD)

<u>LER Number</u>	<u>Event Date</u>	<u>Cause Code</u>	<u>Description</u>
84-27	11/18/84	B	Service Water Leaks Inside Containment
84-28	12/23/84	A	Reactor Trip From 77% While Reducing High Flux Trip Setpoints
84-29	12/31/84	B	Reactor Trip From 93% Due to Partial Closure of 11BF19
85-01	2/5/85	B	AFW Pump Circuitry Does Not Meet Single Failure Criteria
85-02	2/13/85	A	Containment Pressure Relief Operations Not IAW Technical Specification Requirements
85-03	2/14/85	B	12MS28 Closed Signal to SSPS Train "B" Inoperable
85-04	2/26/85	X	Foreign Matter Contamination of New Terrestrial T-68 Lube Oil
85-05	7/1/85	D	Waste Gas Decay Tanks Not Sampled Prior to Releasing Contents
85-06	3/20/85	X	Service Water Leak Inside of Containment
85-07	7/8/85	X	No. 14 Waste Gas Decay Tank - Inadvertent Release of Contents
85-08	7/29/85	B	Service Water Leak Inside of Containment
85-09	9/13/85	A	Exceeded Time Limit on Diesel Surveillance Testing
85-10	9/19/85	A	Waste Gas Decay Tank Oxygen Not Continuously Monitored
85-11	9/22/85	A	Action Statement for Reactor Coolant System Leak Rate Not Entered.

TABLE 5 (CONTD)

LER SYNOPSIS (9/1/84 - 9/30/85)SALEM GENERATING STATIONUNIT 2

<u>LER Number</u>	<u>Event Date</u>	<u>Cause Code</u>	<u>Description</u>
84-18	7/25/84	E	Reactor Trip From 66% With Resultant Safety Injection
84-19	7/26/84	A	Both Containment Spray Systems Inoperable in Mode 4
84-20	8/13/84	A	Component Cooling System - Missed Surveillance
84-21	8/26/84	E	Reactor Trip From 100% Due to Low Low Level #24 Steam Generator
84-22	9/5/84	E	Reactor Trip From 54% - SF/FF Mismatch and Low Level #24 Steam Generator
84-23	9/6/84	X,A	Plant Vent Sample Pump Inoperable
84-24	10/4/84	X	Reactor Trip From 100% Due to Turbine Generator Failure
84-25	11/26/84	A	Weekly Plant Vent Particulate Sample Not Analyzed Within Time Required by Technical Specifications
84-26	12/21/84	B	Radioactive Liquid Release Not Continuously Recorded
85-01	1/28/85	A	2A Diesel Generator - Test Failure. Service water valve installed incorrectly caused high cooling water temperature.
85-02	3/8/85	X	2A Diesel Generator - Test Failure. Excessive friction preventing proper fuel rack motion.

TABLE 5 (CONTD)

<u>LER Number</u>	<u>Event Date</u>	<u>Cause Code</u>	<u>Description</u>
85-03	3/29/85	X	Pressurizer Overpressure Protection System Channel II Initiations
85-04	4/13/85	X	Reactor Trip From 25% During Startup Operations
85-05	4/17/85	E	Reactor Trip From 17.5% Power During Startup Operations
85-06	4/23/85	D	Reactor Trip From 54% - Turbine Trip and P-7
85-07	4/7/85	X	Number 22 Steam Generator Safety Valves Inoperable
85-08	5/2/85	D	Reactor Trip From 69% - Main Generator "Loss of Field" Relay Actuation
85-09	5/10/85	B	Reactor Trip From 100% - Dropped Control Rod
85-10	7/7/85	B	Failure to Comply with Technical Specification Action Requirements
85-11	7/7/85	A	Reactor Trip From 33% - High-High Level No. 21 Steam Generator/Turbine Trip
85-12	7/8/85	B	Reactor Trip From 10% Due to Low-Low Water Level in #23 Steam Generator
85-13	7/6/85	X	2B Diesel Generator Test Failure. Malfunction of Field Ground Relay due to mechanical latch alignment.
85-14	7/11/85	X	2B Diesel Generator Test Failure Due to Fuel Oil Leak
85-15	7/20/85	X	Reactor Coolant System Unidentified Leakage Greater Than T/S Limit

TABLE 5 (CONTD)

<u>LER Number</u>	<u>Event Date</u>	<u>Cause Code</u>	<u>Description</u>
85-16	7/23/85	X	Boric Acid Tanks and Boron Injection Tank Boron Concentration Below Specifications
85-17	8/8/85	X,B	Reactor Trip From 100% During Solid State Protection System Testing
85-18	8/27/85	X,B	Component Cooling Water Heat Exchanger Service Water Flow Rate Below Required Value
85-19	9/11/85	B	Service Water Leak in Containment
85-20	9/21/85	X	Manual Reactor Trip

TABLE 6

REACTOR TRIPS AND PLANT SHUTDOWNS - UNIT 1

<u>Date</u>	<u>Power Level</u>	<u>Description</u>	<u>Cause</u>
9/1/84 10/12/84		The fifth refueling outage commenced on February 24, 1984	
10/13-16/84		Low power physics testing following refueling outage	
10/14/84		Shutdown due to inoperable containment isolation valve	Limiter torque operator failed
10/21/84		Shutdown due to feedwater valve problem (3 of 4 BF13 Valves) closing without cause	Unknown
10/21/84		Startup	
10/22/84	8%	While performing overspeed trip test on the main turbine, after refueling, with power greater than P-7 interlock. Operator error. Trip could have been avoided with power less than P-7 interlock	An induced vibration during the turbine overspeed resulted in a false pressure signal
10/23/84		Startup	
11/4/84		Shutdown due to periodic Low Flow alarms on Stator Water System	Stator water pumps were cavitating during system purges due to improper method
11/4/84		Startup	
11/6/84	91%	Trip due to Low Steam Generator level in #13 Steam Generator. EHC System on Main Turbine caused trip	EHC System malfunction causing a load rejection
11/9/84		Startup	

TABLE 6 (CONTD)

REACTOR TRIPS AND PLANT SHUTDOWNS - UNIT 1

<u>Date</u>	<u>Power Level</u>	<u>Description</u>	<u>Cause</u>
11/11/84	93%	Trip due to Low Steam Generator level on #13 Steam Generator EHC System on Main Turbine caused trip	EHC System malfunction
11/20/84		Startup	
12/3/84	77%	Technician error while adjusting over temperature delta T circuits setpoints with channel 44 Nuclear Instrumentation bypassed (allowed by Technical Specifications). The technician mistakenly placed channel 44 back in service causing the trip	
12/3/84		Startup	
12/23/84		Trip due to Over temperature Delta T	Technician error
12/28/84		Startup	
12/31/84	95%	Trip due to Steam Generator steam flow/feed flow mismatch and steam generator low level caused by malfunction of air operated feed regulation valve	Malfunctioning feedwater control valve
1/1/85		Startup	

TABLE 6 (CONTD)

REACTOR TRIPS AND PLANT SHUTDOWNS - UNIT 2

<u>Date</u>	<u>Power Level</u>	<u>Description</u>	<u>Cause</u>
9/5/84	54%	While operating on one feed-water pump the other feedwater pump tripped causing a Low Low water level in No. 24 Steam Generator	Steam Generator Pump tripped due to air intrusion in the pump suction line
9/7/84		Startup	
10/4/84	100%	Trip due to generator differential relay protection actuation	Generator Failure
10/4/84 - 4/10/85		Refueling and Generator Replacement Outage	
4/10/85		Startup and Low Power Physics Testing	
4/13/85	25%	While performing maintenance/surveillance on steam flow instruments a low steam generator level with steam flow/feed flow mismatch tripped the unit. Transmitter voltage checks were being performed with one channel in test. Plant isolations caused another channel to trip causing the reactor to trip. This trip was attributed to poor judgment on the part of the supervisor to allow testing while the plant was in a low power isolating condition	Steam Generator Feed Pump Failure
4/13/85		Startup	
4/17/85	17%	Trip was caused by Low Low in No. 24 Steam Generator when No. 21 Steam Generator feed pump lost speed due to condensate collecting in the steam supply. Caused by crud and corrosion products in the steam traps which could not remove the condensate.	Feedwater Transient

TABLE 6 (CONTD)

REACTOR TRIPS AND PLANT SHUTDOWNS - UNIT 2

<u>Date</u>	<u>Power Level</u>	<u>Description</u>	<u>Cause</u>
4/18/85			Startup
4/23/85	54%	Turbine trip and P-7 interlock. A spike in turbine control oil pressure induced by air trapped in the lube oil cooler. When the coolers were shifted the air entered the control oil system.	Turbine Lube Oil Cooler improperly operated
4/23/85		Startup	
5/2/85	69%	Turbine trip/generator trip due to loss of field relay actuation. Improperly wired relay, during installation of new main generator. Wired improperly due to incorrect wiring schematic	Improper wiring of the Loss of Excitation
5/4/85		Startup	
5/10/85	100%	Trip due to high negative flux rate when Rod (2C4) dropped inot the core.	Dropped rod due to a poor electrical
5/15/85		Startup	
6/28/85		Shutdown to repair a leaking Pressurizer Safety Valve	Flange Leakage on Pressurizer Safety Valve 2PR-4
7/7/85		Startup	
7/7/85	53%	Main turbine tripped due to High High water level in No. 21 Steam Generator. Operator error. Failure to follow procedure while tranferring modes of operation for feedwater system	Operator Error
7/8/85		Startup	

TABLE 6 (CONTD)

REACTOR TRIPS AND PLANT SHUTDOWNS - UNIT 2

<u>Date</u>	<u>Power Level</u>	<u>Description</u>	<u>Cause</u>
7/8/85	10%	The trip was caused by Low Low water level in No. 23 Steam Generator. Operation was being conducted at a power level above the capacity for the auxiliary feedwater pumps to deliver the necessary water flow to sustain water level in the proper band. Management inattention to plant startup was cause.	Operator Error
7/8/85		Startup	
7/20/85		Shutdown to Repair RCS Valve Leakage	RCS Leakage
7/22/85		Startup	
7/23/85		Shutdown to correct Boron Injection Tank and Boric Acid Storage Tank Boron Concentrations	Boron Concentration out of specification Low
7/23/85		Startup	
8/8/85	100%	P-7 turbine trip due to loose wire in reactor trip breaker found during normal breaker surveillance testing.	Loose Lead in Reactor Trip breaker cabinet
8/10/85		Startup	
8/27/85		Shutdown to Repair Component Cooling Service Water Flow Problems	Vibration Induced Fatigue Failure of 22SW356
8/29/85		Startup	
9/21/85		Manual Trip due to inability to maintain RCS pressure	Leakage past pressurizer spray isolation valve
9/23/85		Startup	

TABLE 7
RECORD OF MEETINGS AND
OFFICIAL DOCUMENTS ISSUED

1. NRR/Licensee Meetings at NRC

Semi-auto Switchover	11/29/84
	11/30/84
Refueling Outage Technical Specifications	07/25/85
Briefing New Division of Licensing Director	02/14/85

2. Site Visits/Meetings by the Project Manager and Other NRR Personnel

SALP Management Meeting	11/15/84
Management Meeting - Discuss Action Plan	11/16/84
Management Meeting - Discuss Action Plan	04/19/85
Management Meeting - Discuss Action Plan	09/25/84
DCRDR Pre-Implementation Audit	11/26/84
AEOD Meeting - Wrong Train/Unit	07/23/85
EOP Upgrade Audit	09/25/85

3. License Amendments Issued

<u>Amend No.</u>	<u>Subject</u>	<u>Date</u>
<u>Unit 1</u> 57 26	<u>Unit 2</u> Main Steam Isolation Valve	10/15/84
58 27	RCS Inventory Balance	10/17/84
59 28	(1) RETS (2) Nuclear Dept. Changes (3) RTB Testing & Surv.	12/05/84
29	Removes License Condition	02/07/85
30	Revise K(z) Normalized FQ(z)	02/22/85
60 31	(1) Modifies Tech Spec Table (2) Corrects Typo Error (3) Revises delta T Trip 61	11/13/84
61 32	Extend Impl Time for RETS	04/09/85
62 33	Nuclear Dept Reorg	05/13/85
34	Revises Power Dependent Insertion Limits	05/17/85
63 35	RETS Corrections	05/28/85

TABLE 7 (CONTD)

License Amendments Issued (Cont'd)

<u>Amend No.</u>		<u>Subject</u>	<u>Date</u>
<u>Unit 1</u>	<u>Unit 2</u>		
64	36	RETS Changes	05/30/85
	37	Control Room Leak Test Pressure	05/30/85
	38	Sodium Hydroxide Test Flow Value	06/13/85
65	39	Purge and Vent Tech Specs	06/25/85
	40	Corrects Typo Error	09/16/85
66	41	Add Surv Reqt for Safety Injection Pumps	09/16/85
67	42	Add Tech Spec for Post Accident Sampling System	09/16/85

4. Exemptions (Technical and Scheduling) - None Granted

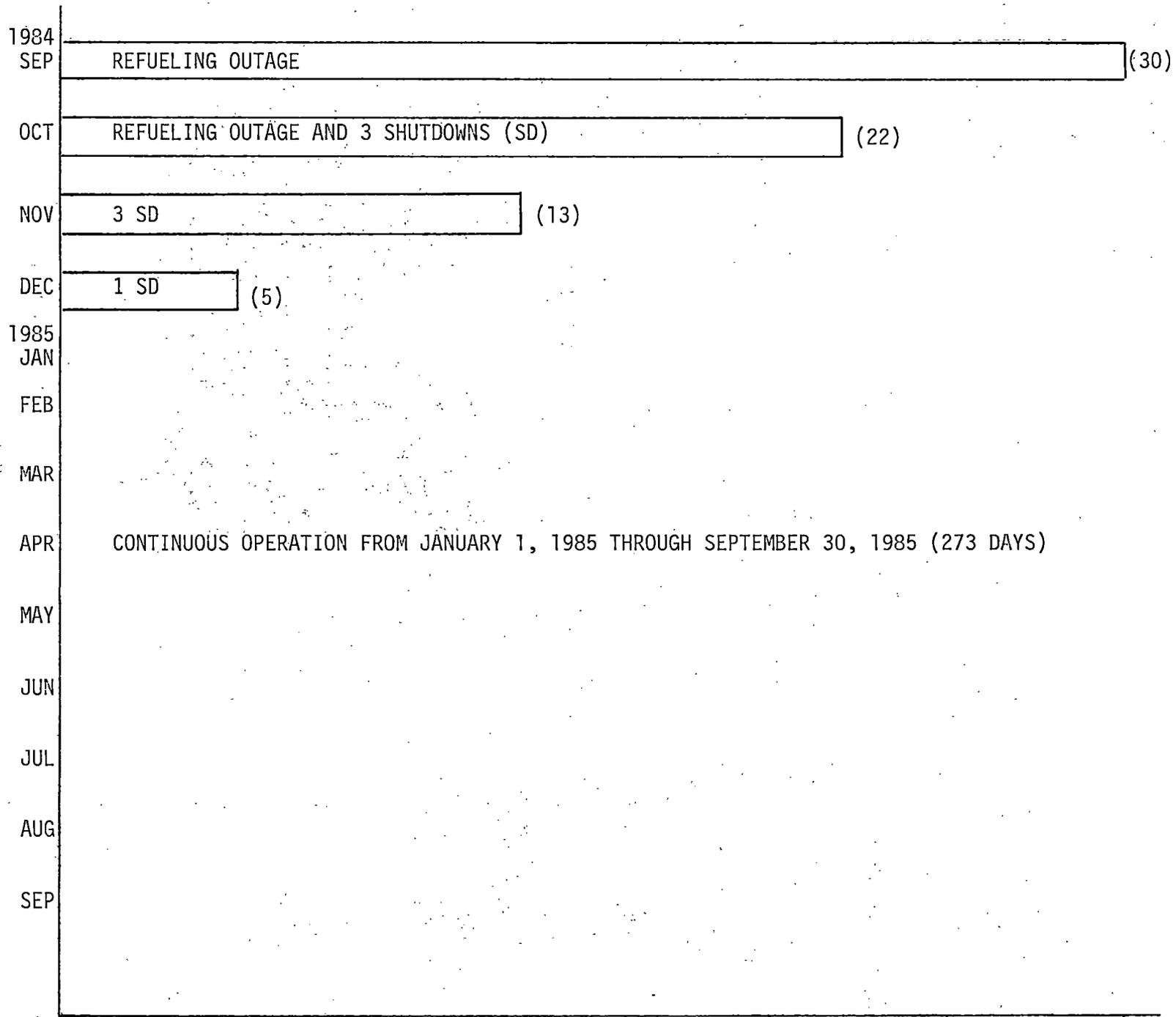
5. Reliefs - None Granted

6. Orders Issued - None

7. Letters with Safety Evaluation - Total of 21

8. Total Licensing Actions

	<u>Plant-specific</u>		<u>Multi-plant</u>		<u>TMI</u>	
	<u>Unit 1</u>	<u>Unit 2</u>	<u>Unit 1</u>	<u>Unit 2</u>	<u>Unit 1</u>	<u>Unit 2</u>
On 10/1/84, active action	9	11	17	17	16	16
Completed during SALP period	10	16	9	9	5	5
New Actions	19	17	9	9	0	0
On 9/30/84, active actions	18	12	17	17	11	11



F1 - 1
 FIGURE 1
 NUMBER OF DAYS SHUTDOWN - UNIT 1

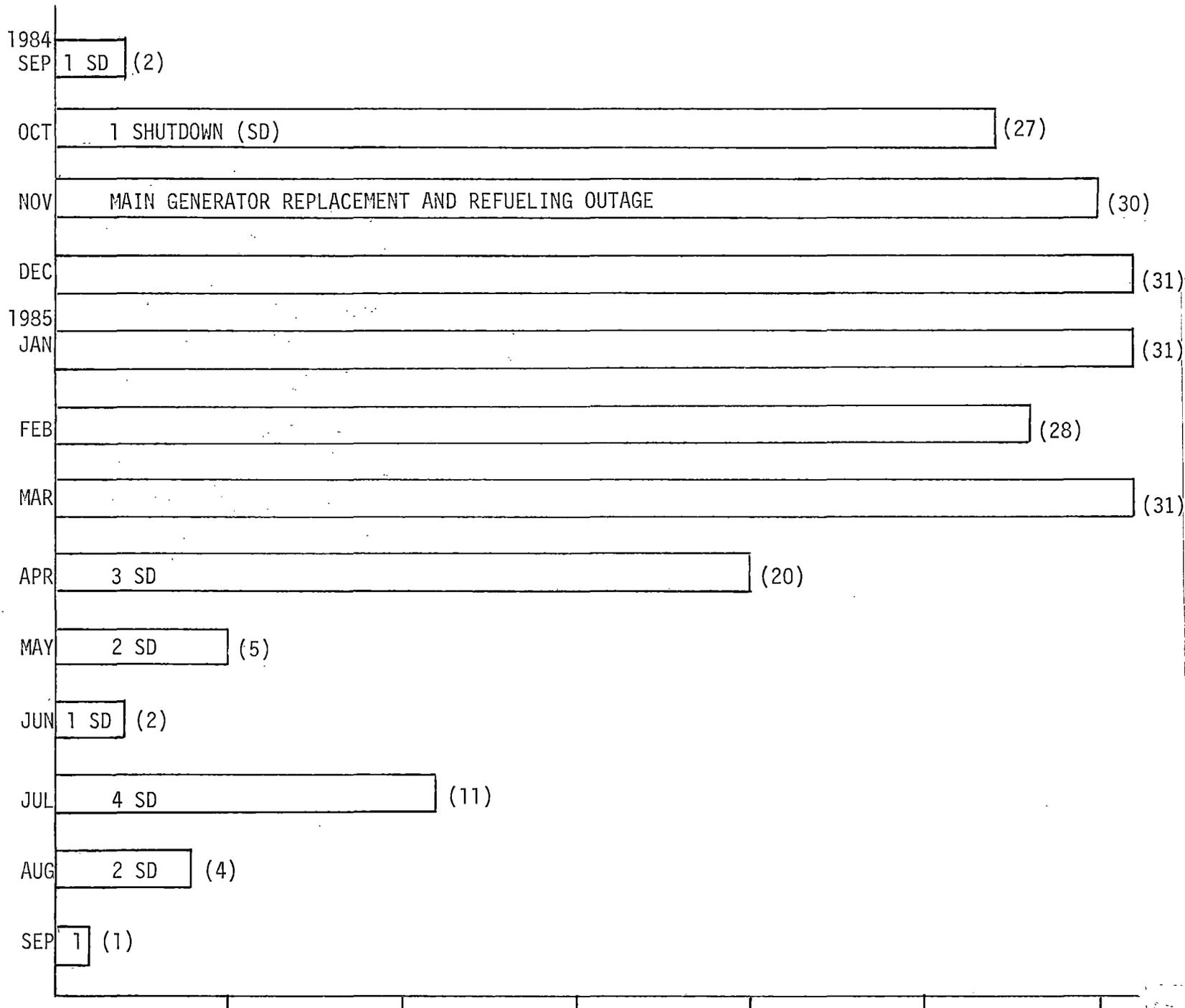


FIGURE 1 (CONTD)
 NUMBER OF DAYS SHUTDOWN - UNIT 2