ENCLOSURE 1

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

BOARD REPORT

50-219/87-99

GENERAL PUBLIC UTILITIES NUCLEAR CORPORATION

OYSTER CREEK NUCLEAR GENERATION STATION

ASSESSMENT PERIOD: OCTOBER 1, 1987 - JANUARY 31, 1989

BOARD MEETING DATE: MARCH 14, 1989

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated agency effort to collect and evaluate available agency insights, data, and other information on a plant/site basis in a structured manner in order to assess and better understand the reasons for a licensee's performance. Unacceptable performance is addressed through NRC's enforcement policy and the implementation of this policy should not be delayed to await the results of a SALP. Compliance with NRC rules and regulations satisfies the minimum requirements for continued operation of a facility; the degree to which a licensee exceeds regulatory requirements is a measure of the licensee's commitment to nuclear safety and plant reliability.

The SALP process is used by the NRC to synthesize its observations of and insights into a licensee's performance and to identify common themes or symptoms. As such, the NRC needs to recognize and understand the reasons for a licensee's strengths as well as weaknesses. The SALP process is a means of expressing NRC senior management's observations and judgements on licensee performance. It should not be limited to focusing on weaknesses, and it is not intended to identify proposed resolutions or solutions of problems. The licensee's management is responsible for ensuring plant safety and establishing effective means to measure, monitor, and evaluate the quality of all aspects of plant design, hardware, and operation. The SALP process is intended to further NRC's understanding of (1) how the licensee's management guides, directs, evaluates, and provides resources for safe plant operations, and (2) how these resources are applied and used. As a result, emphasis is placed on understanding the reasons for a licensee's performance in identified functional areas and on sharing this understanding with the licensee and the public. The SALP process is intended to be sufficiently diagnostic to provide a rational for allocating NRC resources and to provide meaningful feedback to the licensee's management.

An NRC SALP Board, composed of the staff members listed below, met on March 14, 1989, to review the observations and data of performance, and to assess licensee performance in accordance with Chapter NRC-0516, "Systematic Assessment of Licensee Performance." This guidance and evaluation criteria are summarized in Section III of this report. The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at Oyster Creek for the period October 1, 1987 to January 31, 1989.

The SALP Board for Oyster Creek was composed of:

SALP Board

Board Chairman

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

Members

S. Colli s, Deputy Director, DRP
M. Knapp, Director, Division of Radiation Safety and Safeguards (DRSS) (part time)
T. Martin, Director, Division of Reactor Safety (DRS)
L. Bettenhausen, Chief, Projects Branch No. 1, DRP
R. Gallo, Chief, Operations Branch, DRS (part time)
C. Cowgill, Chief, Reactor Projects Section 1A, DRP
J. Wechselberger, Senior Operations Engineer, NRR (voting for Senior Resident Inspector)
J. Stolz, Director, Project Directorate 1-4, NRR
A. Dromerick, Project Manager, NRR
W. Johnston, Deputy Director, DRSS (part time)

Other

W. Baunack, Project Engineer, DRP
D. Lew, Resident Inspector
E. Collins, Senior Resident Inspector

I.A Background

Oyster Creek is a GE BWR/2 with a Mark I containment. The Construction Permit was issued in December 1964 and commercial operation commenced on December 23, 1969 at 1600 Megawatts thermal.

This unit was delivered to Jersey Central Power and Light Company for operation as one of the first GE "turnkey" reactor plants. Later, the unit's licensed power was increased to 1930 Megawatts thermal.

The nuclear steam supply system differs from later model BWRs in that it uses 5 reactor recirculation pumps and the reactor vessel has no internal jet pumps. The emergency core cooling systems consist of two low pressure core spray systems, 2 isolation condensers for heat removal, and an automatic depressurization system.

I.B Licensee Activities

At the beginning of the assessment period, the plant was shut down in accordance with a confirmatory action letter. This letter was issued as a result of a safety limit violation which occurred on September 11, 1987. On November 6, 1987, a letter permitting restart was issued to the licensee. On November 20, 1987, the International Brotherhood of Electrical Workers initiated a strike against the utility. Management personnel assumed the duties of bargaining unit personnel and preparations for plant startup continued. Reactor startup occurred on November 22, 1987 and the turbine was placed on line on November 24, 1987. The startup and subsequent plant operation were conducted by supervisory personnel.

On December 11, 1987, the strike was settled. Returning workers were trained and reoriented before resuming normal duties. Plant operation continued at full power with only minor power reductions for surveillances or maintenance until July 9, 1988 when, following main steam isolation valve (MSIV) surveillance testing, no steam flow was indicated in the "A" steam line. A shutdown was initiated and the plant was placed in cold shutdown on July 10, 1988. This terminated a 229 day continuous run.

Subsequent investigation of the cause of no steam flow in the "A" steam line revealed an MSIV stem failure. Following MSIV repairs a plant startup commenced on August 9, 1988, and the generator was placed on the line on August 12.

On August 28, 1988, the "B" isolation condenser started "steaming" following a six day out of service period for maintenance. On September 2, 1988, a plant shutdown was initiated due to both isolation condensers being declared inoperable. One isolation condenser was inoperable due to maintenance; the other due to a manual vent line valve being found in the closed position. The shutdown was terminated after the vent valve was opened and noncondensibles were calculated to have been purged on September 3, 1988.

On September 26, 1988, following a surveillance of the "A" isolation condenser it also began to "steam". On September 29, following an evaluation of isolation condenser conditions, both condensers were declared inoperable, and a plant shutdown was initiated. Cold shutdown was achieved on September 30, 1988. Following the shutdown a decision was made to commence the Cycle 12 Refueling Outage which was originally scheduled to begin on October 15, 1988. The plant remained shut down for the remainder of the SALP period.

On May 1, 1988, a new Vice President and Director of Oyster Creek was appointed. The previous Director of Oyster Creek was appointed Vice President and Director of a new GPUN division encompassing corporate-wide training and education and quality assurance programs.

I.C Direct Inspection and Review Activities

Three NRC resident inspectors were assigned to the site. One new resident was assigned in January, 1988; the third resident was assigned in July 1988. Additionally, two temporary resident inspectors were assigned for a period of six weeks each. The total inspection time for the assessment period was 8569 hours (resident, region and headquarters based) with a distribution in the appraisal functional area as shown with each functional area. This equates to 6427 hours on an annual basis.

Special inspections included the following:

-- Special team inspection to assess the safety significance of freezing conditions identified in the reactor building on January 6, 1988 (January 25-29, 1988).

-- The annual emergency preparedness exercise was held on May 11-12, 1988.

- -- Special team inspection to review the circumstances and events leading up to a subsystem of the containment spray/emergency service water being returned to service exceeding operability acceptance criterion (July 11-15, 1988).

- -- Regulatory Effectiveness Review conducted July 18-22, 1988.

- -- Special team inspection to review licensee's evaluation and response to a main steam isolation valve broken stem (July 18-22, 1988).

- -- Emergency Operating Procedure inspection conducted September 6-15, 1988.

- -- Augmented Inspection Team inspection to review the circumstances, events and licensee response to a situation where both emergency condensers were inoperable (October 5-13, 1988).

- -- Safety System Outage Modification Inspection conducted October 17 through November 4, 1988 and November 28 through December 16, 1988.

II. SUMMARY OF RESULTS

II.A Overall Summary

Overall, inconsistent performance was again noted at the facility. Improvements were made in the plant material condition, the number of forced outages were significantly reduced and there were no plant trips. In addition, the number of operator errors was reduced. In contrast, however, performance in the areas of Security and Radiological Controls degraded during the period.

The site and corporate management have undertaken many new initiatives to improve the performance of the facility both in the area of safety and plant performance. GPUN maintains a policy for its employees which stresses a high standard of integrity and procedure adherence and a concept of safety before schedule. This policy is well understood but inconsistently applied at the lower levels of the organization.

Licensee programs to surface and correct deficiencies are in place but, are not fully effective. A preliminary safety concern program has evidenced problems in bringing issues to closure and providing feedback to individuals. Interfaces between operators and their management have not worked well to resolve identified deficiencies. Communications problems between the operations department and support organizations have also been noted.

In the Radiological Controls area, weaknesses were identified that contributed to a decline in the program's effectiveness. Those weaknesses include ineffective root cause analysis, incomplete control and planning of radiological operations, incomplete corrective actions on identified problems, and lax worker attitudes.

The licensee has made significant progress in reducing the maintenance backlog at the facility and instituted changes to further enhance maintenance effectiveness. A new training program for maintenance technicians and a shift to a computerized maintenance control system have been implemented. Rework remains a problem at the facility and problems were identified associated with implementing the maintenance control program.

In the area of Technical Support, the licensee has actively responded to previous SALP concerns. These efforts have resulted in an enhanced root cause analysis of engineering support and a reduction in the engineering work backlog. Some examples of insensitivity to emerging and long standing technical problems still exist. Communications between site and corporate engineering were weak at times and as a result the licensee's engineering resources were sometimes not effectively used. The difficulties encountered in correcting some of the long standing problems are due in part to issues resulting from the age of the plant, the volume of issues to be resolved, and an ill-defined plant design basis. Development of a sound design basis for the plant is an essential element central to attaining substantial overall improvement in facility performance.

In summary, the licensee remains committed to establishing and implementing programs to support safe, efficient operation of the facility. Full application and integration of these initiatives is hindered by the age and design of the facility. These equipment and material issues continue to challenge personnel performance and stress the licensee's organization.

II.B Facility Performance Analysis Summary

This SALP report incorporates the recent NRC redefinition of the assessment functional areas. Changes include combining the previously separate Maintenance and Surveillance areas and addition of the Safety Assessment/Quality Verification area. The Safety Assessment/Quality Verification section is largely a synopsis of observations in other functional areas. Additionally, the Fire Protection, Licensing, Refueling/Outage, Training, and Assurance of Quality areas have been incorporated into the remaining functional areas as appropriate.

Functional Area		Rating Last Period*	Rating This Period**	Trend
A.	Plant Operations	3	3	Improving
B.	Radiological Controls	[illegible]	3	--
C.	Maintenance/Surveillance***	2/2	2	--
D.	Emergency Preparedness	2	2	--
E.	Security	1	2	--
F.	Engineering/Technical Support	3	2	--
G.	Safety Assessment/Quality Verification	#	2	--
H.	Licensing Activities	2	#	--
I.	Training & Qualification Effectiveness	2	#	--
J.	Assurance of Quality	2	#	--

* October 16, 1986 to September 30, 1987
** October 1, 1987 to January 31, 1989
*** Previously addressed as separate areas of Maintenance and Surveillance.
# Not addressed as a separate area.

NOTE: It is important to note that a major revision of the SALP Manual Chapter has been made which combined some areas and made changes to the attributes in the functional areas. Therefore, a direct comparison of the functional area grades cannot be made between the previous SALP and the current one.

II.C Unplanned Shutdowns, Plant Trips, and Forced Outages

DATE	POWER LEVEL	DESCRIPTION	ROOT CAUSE	FUNCTIONAL AREA
7/9/88	40%	During testing one MSIV failed to close. The series MSIV was closed and disabled until the operability of the affected valve could be established. After several attempts, the MSIV appeared to close and open within the normally expected stroke times. After attempting to open both MSIV's, no steam flow was indicated in the "A" steam line. A shutdown of the reactor was initiated to determine the cause of no steam flow in the "A" steam line header and make appropriate repairs.	Main Steam isolation valve (MSIV) stem had separated from the pilot poppet. Root cause for the shear failure of the MSIV stem has not been determined.	N/A
9/29/88	99%	An evaluation of thermal profiles of the isolation condenser piping concluded that water was present in the steam piping. Due to the potential for severe water hammer upon system initiation, both isolation condensers were isolated and declared inoperable and the reactor was shut down.	During maintenance of Isolation Condenser valve steam lines filled with water.	N/A

III. CRITERIA

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

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

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

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

3. Responsiveness to NRC initiatives;

4. Enforcement history;

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

6. Staffing (including management); and

7. Effectiveness of training and qualification program.

However, the NRC is not limited to these criteria and others may have been used where appropriate.

On the basis of the NRC assessment, each functional area evaluated is rated into to three performance categories. The performance categories used when rating licensee performance are defined as follows:

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

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

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

The SALP Board may assess a functional area to compare the licensee's performance during the last quarter of the assessment period to that during the entire period in order to determine the recent trend. The SALP trend categories are as follows:

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

Declining: Licensee performance was determined to be declining near the close of the assessment period and the licensee had not taken meaningful steps to address this pattern.

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

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

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

IV. PERFORMANCE ANALYSIS

IV.A Plant Operations (2840 Hrs., 33%)

IV.A.1 Analysis

The previous SALP rating in this area was Category 3. Improvements were noted in onshift decisionmaking, emphasis on shift teamwork, control room professional environment and operator action to control water level transients. Special NRC inspection findings were generally positive; concluding that a competent organization with strong management and effective programs were in place. However, the special inspections also observed a lack of promulgation of management goals to lower level personnel to ensure understanding of risk importance and a more inquisitive approach to non-routine plant conditions. Positive observations were contrasted with safety significant events indicating inconsistencies in program application and personnel performance. Additional assessment concluded that equipment challenges added to a decrease in the operators performance. Procedural conflicts fostering a graded approach to compliance, schedule pressure and housekeeping problems, all contributed to a conclusion of overall inconsistent operational performance.

During the current SALP cycle, senior operations management was changed and the new managers encouraged an increased emphasis in identifying problems for resolution. Improved periodic meetings were held with shift management to develop a better understanding of problems and to unify operations management. Senior site management has continued to emphasize cooperation and teamwork through periodic meetings of all key site management personnel to resolve problems and increase communication among divisional representatives at the facility. Other positive attributes include major evolutions by operational plans specifying organizational responsibility, restart certifications, senior corporate management review of restart readiness, and implementation of the INPO sponsored HPES process. Senior site management took a major step in reenforcing the concept of safety before schedule, when, with the direct involvement of the site director, refueling errors were dramatically decreased. Refueling activities were delayed to facilitate extensive training sessions for operators, core engineers, and operations management to discuss the "error-free" refueling plan, refueling operations and the concept of safety before schedule. The reactor refueling was subsequently conducted without error.

The plant continuously operated for 229 days. This was due in part from increased attention to plant equipment problems. This is in direct contrast to the past when numerous reactor scrams and unplanned shutdowns have impacted plant performance. Recently the plant implemented a modification to help control reactor water level following post plant trips; this been an identified problem in previous SALP reports. Other positive indicators of current plant performance are the reduction in temporary procedure changes exceeding the 14 day technical specification approval limit, increased personnel in operator training programs and periodic meetings between the site director and the QA organization to effect resolution of quality issues. In addition, the licensee has established an Operations Coordinations office to alleviate some of the administrative burden from the shift supervisor during outages. This is perceived as positive; however, early in the outage, shift supervisors were at times concerned about effective communication regarding outage activities.

Operators have shown improvement by a professional attitude toward their duties and proper control room decorum; however, some distractions are still noted. One particular bright spot has been the determination of a few operators to identify and report potential significant equipment and system problems and to correct long standing facility problems. Operators and operations personnel in general are responsive to inspector concerns and are open in their communications. Conditions are not conducive to promoting cooperation and teamwork between operators and operations middle management. Likewise, lack of support to the operators by operations middle management was noted. This was evidenced by certain equipment being allowed to remain out of service for long periods, as in the case of the reactor building heating and ventilation problems that lead to freezing in the reactor building despite operator complaints, and isolation condenser steam line temperature anomalies not being addressed. Operations management did not adequately respond to QA findings associated with the containment spray/emergency service water system, and this eventually led to a plant problem. Also, the acceptance by operations management of modified systems for operation without a formal turnover of the completed modification has resulted in system operation without complete documentation.

A strike occurred immediately before returning the plant to power operation in the fall of 1987. The NRC determined that the licensee's strike plans were comprehensive and appropriate to address the situation. Management personnel assigned to perform operator duties during this time were thorough and knowledgeable in plant operation and startup activities. Management plans to transfer operation of the plant to union personnel after the strike were also considered highly effective. The licensee has initiated a number of programs to improve worker attitudes and increase productivity since the conclusion of the strike.

During this SALP period, operator license examinations were successfully administered to five SRO and 3 RO candidates. It was noted that control room staffing consisted of only a five shift rotation.

Operations have improved in specific areas, which may be attributed to self initiated actions as well as significant input from internal license and regulatory organizations. Although the plant operated continuously for 229 days, power reductions were required to repair plant equipment problems. Some long standing equipment problems still persist. These include intermediate range monitors, control rod drive hydraulic control units, safety relief valve acoustic monitors and thermocouples and various secondary equipment problems.

NRC observations indicate that, although daily planning meetings effectively communicate plant and maintenance status, there are interface problems at the working level between the Operations Department and support organizations. Examples of conditions that resulted from this are: worker contamination from poorly planned post maintenance testing of the offgas system, the loss of secondary containment during isolation condenser maintenance, overlapping stack gas monitor tagouts which resulted in making the monitor inoperable and the removing of a station battery and the opposite train diesel from service simultaneously, thus, making both diesels unable to respond in the event of a loss of offsite power.

Operations understanding of the technical specifications and the design basis and evaluating plant conditions against these requirements is a weakness. Examples include operations attempt to startup the plant in an action statement with an inoperable offgas sample pump and three control rods made inoperable due to inadequate operator response to low gas pressure alarms.

Station procedures are generally good, but have been key contributors to two major events during this SALP period. Placing the isolation condensers in a questionable condition and potentially exceeding a limiting condition for operation with the containment spray/emergency service water system were direct results of poor procedures. In the first case, a long standing procedure deficiency became evident and in the second, a poor modification process resulted in the procedure problems. Also, during the freezing reactor building temperature inspection, inadequate procedure reviews were discovered. In this case, the system procedure had been revised 13 times over a 20 year period without detecting that the control room reactor building temperature gauge referred to in the procedure was never installed. Other examples include operator confusion from the conflicting instructions for equalizing pressure across the MSIVs and minimum battery room air temperature provided by different procedures, and an unspecified action in response to a refueling cavity seal leak alarm.

Operator errors have decreased since the last SALP, and, overall, improvement in this area has been seen. However, there were some errors during the plant operation. During reactor defueling numerous operational errors occurred that resulted in the direct involvement of the Site Director to bring about a positive change. There was one instance of a lack of command and control during the MSIV stem failure in which a half trip was not inserted promptly. Also, logging of some events was not timely such as the isolation condenser initiation which was not logged or reported until some time after it occurred.

During this SALP period, a special inspection was performed of the Emergency Operating Procedures (EOPs). This inspection concluded that the EOPs were technically sound, that the operators understood their fundamental technical principles, and that the operators were able to execute the EOPs. The overall quality of the emergency operating procedures is considered to be a strength. The team did observe an unfamiliarity with the "hands-on" use of the procedures and flow charts. This unfamiliarity is considered a training deficiency.

Operator attitude was a concern identified during the EOP inspection as well as during defueling. The EOP inspection identified an attitude of overconfidence as well as a tendency to minimize the significance of the EOPs. Likewise, in response to the number of errors which occurred during the defueling, operators displayed an attitude that this performance was no different than that of the previous years. Management did take corrective action to improve refueling performance.

In conclusion, operations has shown improvement, including a reduction in operator errors. Senior site management has made efforts to build cooperation and teamwork. Operations middle management has not aggressively supported operators by correcting identified QA concerns, addressing operator questions and concerns, and improving middle management and operator cooperation and teamwork. Plant material condition continues to improve as evidenced by a long operational period. The initiative shown by several operators to correct long standing facility problems is encouraging. Procedure weaknesses still exist and contributed to plant events.

IV.A.2 Conclusion

Category 3, Improving.

IV.A.3 Recommendation

None.

IV.B Radiological Controls (560 Hrs., 6.5%)

IV.B.1 Analysis

Previous SALP

The last SALP rated this area as Category 2. Weaknesses noted included: incomplete pre-job briefing of workers; ineffective root cause analyses following radiological incidents; lack of emphasis and followup of quality control functions performed by Radiological Engineering; and poor ALARA effort and ineffective goal setting and goal tracking. Strengths included an adequate staff with good qualifications, good facilities and equipment, training, posting, and access control.

Current SALP

Four special inspections were conducted in this area during the current SALP period, in addition to the routine reviews by the resident inspectors.

Overall, the licensee's radiological control program remains adequate. However, continuing weaknesses were identified that contributed to a noticeable degradation in program effectiveness. These weaknesses include (1) deterioration of control and planning of radiological operations, (2) incomplete corrective action on identified problems, (3) continued examples of ineffective root cause analysis, and (4) a lack of aggressive action to reduce collective worker exposure.

Control and planning of radiological work is generally adequate, but instances of poor performance were noted. Appropriate actions to address deteriorating radiological conditions were not taken in some cases. As an example, a control rod manipulator was used to facilitate the removal of control rod drives from the reactor. This resulted in an increase in the rate at which the drives were removed and sent to the drive maintenance and rebuild area. However, the effects of this increased rate on radiological conditions in that area were not adequately considered. As the backlog of control rod drives in the rebuild area became excessive, the area became highly contaminated. The contamination subsequently spread outside the rebuild area to other areas of the reactor building. The problem was compounded by the lack of experience and incomplete training of the workers in the rebuild area. Although the workers had been put through mockup training, the pace of the training was rapid, and many were not trained on the actual work performed in the rebuild area.

Although the licensee continues to demonstrate an ability to identify problems, the corrective action program was at times ineffective in achieving desired improvements and preventing recurrence. The following are examples of this problem.

-- Improper priority assignments to radiological control problems were observed. For example, high radiation area doors which were required to be locked were found unlocked due to their poor mechanical condition. Although corrective action was proposed, it was not completed because of the low assigned job priority and subsequent cancellation of the work orders. This resulted in continued instances where high radiation area access control was compromised.

-- Investigation following the occurrence of radiological incidents is prompt, but the depth of review conducted is frequently limited in scope and effectiveness. As an example, disturbances in the ventilation flow pathways in the Augmented Offgas system building produced airborne contamination in the building. Following a number of personnel contaminations, the licensee committed to sampling the air for radioactive gas in case of such incidents. However, the sampling is still not being done in a systematic and controlled manner. The lack of timely performance of air samples was identified during the previous SALP period. In the past this weakness could have led to situations where the licensee was not able to adequately assess the exposure that workers were receiving from airborne contamination. The licensee was not responsive and did not acknowledge the concern, and this weakness still remains. Another identified weakness has been the failure to perform appropriate surveys in areas with non-uniform radiation fields. This program weakness recurs despite licensee's corrective actions implemented to date.

-- One of the principal reasons for the failure of corrective actions is that investigations conducted by the licensee following an incident do not identify root causes but instead concentrate on immediate and sometimes superficial factors. The critiques rarely address problems that result from poor supervisory practices or poor planning, and tend to concentrate on errors committed by the worker and by first line supervisors. In the control rod rebuild room incident mentioned above, important and key contributing factors were not considered in the critique, including failure to anticipate a potential overload of the work area, a lack of clear and adequate procedures to control the work, and poorly trained technicians with little or no experience in covering this type of work. In another incident, a technician and his supervisor removed some temporary shielding in accordance with instructions from radiological engineering causing an increase in the dose rate in the area and unknowingly created conditions that classified the area as a locked high radiation area. The critique of the incident failed to point out that, among the root causes of the incident were improper surveys in a non-uniform radiation field, incomplete supervisory shift briefings, and problems with the tagging and tracking system for temporary shielding.

-- Engineering evaluation in response to NRC concerns has generally been thorough and professional when the problem in question was internal to the Radiological Controls organization on site. This is contrasted by situations in which the evaluations had to be performed by some departments other than Radiological Controls which were poor in quality, excessively brief and unsubstantiated, and reluctantly given. One example was in connection with the licensee's request to permit occupancy of the upper levels of the drywell during fuel movements. In response to an NRC concern regarding radiological safety in the upper elevations in case of a fuel drop accident, the licensee proposed a fence, but did not supply adequate supporting calculations on fence strength. Subsequent calculations were brief, with no stated assumptions. Also, as part of this evaluation, the licensee proposed mechanical stops to limit the range of horizontal movement of the refueling bridge. However, the stops were not installed because of an oversight, and defueling proceeded without these stops until detected by licensed operators while testing the fuel handling bridge.

Lack of aggressive action to reduce collective worker exposure can be found in examples of a lax attitude towards adherence to radiological controls procedures. For example, personnel, including maintenance and quality assurance, have been observed on several occasions entering posted contamination areas and ignoring entry requirements, such as the use of proper protective clothing. One individual repeated this infringement of the rules immediately after his attention was drawn to that fact.

Performance in the area of ALARA remained consistent with that observed during the previous assessment period. The cumulative exposure for the current outage to date is over 1500 man-rem despite an outage goal of 900 man-rem. This goal is still high in comparison to the national average due to a high in-plant source term, plant design and the scope of work in the outage. Compared with previous outages, more efforts to reduce exposure were taken during this outage, however, a lack of progress in long range source term reduction was evident. Source term reduction initiatives included decontamination of many areas of the plant and several highly contaminated systems and the use of shielding in the drywell. Job planning, however, still needs improvement. An exposure reduction plan has recently been developed by the licensee in an effort to identify the areas in which exposure reduction methods can be effectively used. According to this plan, implementation of the recommended measures should produce a realistic two-year rolling average during 1990-1992 of 470 man-rem. Some items recommended in the plan were implemented during the current outage, but to date, no specific timetable was published to implement the major recommendations in the plan to achieve the desired collective dose reduction and to achieve parity with the rest of the industry.

Radiological Effluent Monitoring and Control

One inspection of the licensee's radioactive effluent control program was conducted near the end of the assessment period. The licensee has in place an effective program for controlling radioactive effluent releases from the site. The licensee is meeting Technical Specification requirements with respect to radioactive effluent sampling, analysis, surveillance, and reporting requirements. The required reports are complete and thorough. A noted strength of the licensee's radioactive effluent control program is the attempt to minimize the release of liquid radioactive effluents from the site. During the third quarter of 1987 and for the period January 1, 1988 - May 31, 1988 no liquid effluent releases were made from the site.

Quality assurance audits of the gaseous and liquid radioactive effluent areas were thorough and of sufficient technical depth to adequately assess program capabilities and performance. In addition, Operational QA surveillance activities were of excellent technical depth and were conducted by an individual with appropriate technical expertise.

Chemistry Control

The area of chemical measurement has improved during this assessment period. Initially several analytical results (chloride, sulfate, silica, iron, and boron) were in disagreement with the criteria used for comparison. These results were possibly due to high laboratory room temperature, high reagent water temperature, and an inadequate pipet calibration technique. With special attention to control of these problems, all analyzed results were in agreement with the standards. Currently, the licensee is upgrading the room temperature control system which is indication of the management attention to the chemical measurement program.

Training was of high quality as reflected by the technical depth and also for applicability in the chemistry laboratory. Quality assurance audits of the chemistry program were thorough and of sufficient technical depth to adequately assess program performance.

In summary, the licensee's effluent controls program remains effective and laboratory chemistry control improved. Nonetheless, a number of problems persisted during this period which reflect a decrease in the Radiological Controls program effectiveness. Job planning and control were weak in some areas; incident evaluation and corrective action were incomplete and did not always identify the root cause of a problem. ALARA planning suffered from the lack of aggressive source term reduction and resulted in elevated collective exposure.

IV.B.2 Conclusion

Category 3.

IV.B.3 Recommendation

Licensee: Perform prompt self-assessment of third party review to assure problems are fully identified and corrective action plan developed.

NRC: Follow up self-assessment with review and appraisal.

IV.C Maintenance/Surveillance (2653 Hrs., 31%)

IV.C.1 Analysis

The previous SALP rated both areas of maintenance and surveillance as Category 2. In the area of Surveillance/Inservice Testing, strong administrative control and strong procedures were noted. Concerns were expressed regarding a lack of aggressiveness in root cause analysis of some surveillance identified problems, and that communications between plant departments required improvement. In Maintenance, plant impacting reliability and maintenance associated equipment problems indicated a need for improvement in the overall quality of work performed, and a need for improvement in communications between groups. Also noted were significant steps taken by the licensee to improve overall performance including: personnel changes, a critical self-assessment, establishment of committees to review problems, improvements in post-maintenance testing, and efforts to reduce work backlog.

During this SALP period, the licensee has demonstrated responsiveness to NRC concerns and resolve to improve the performance of plant maintenance. The maintenance program at Oyster Creek remains generally effective and the licensee has implemented several major initiatives to build a more effective maintenance program. The Oyster Creek surveillance program continues to be effective, characterized by strong administrative controls.

Two areas that remain weak are maintenance rework and surveillances which frequently fail. Examples of rework have occurred, including valve leaks at control rod drive hydraulic control units, main steam isolation valve (MSIV) work, intermediate range neutron monitors, and recirculation pump speed control. In each case, corrective maintenance was performed, which failed to correct the deficiency. In addition, surveillance test repeat failures have been main steam isolation valve slow closure test stroke times too long, snubber and hanger deficiencies, and reactor pressure switches out of tolerance. In some cases, equipment age is a factor in these recurring deficiencies and the licensee has implemented major modifications to improve or upgrade equipment. In other cases, however, rework items are a result of ineffective root cause determination and rework identification and correction program.

During an unplanned outage, July 1988, the licensee repaired a temperature problem on a reactor feed pump, speed control on the recirculation pump, safety relief valve thermocouples, intermediate range neutron monitors, and a hydraulic control unit. In each case the problem reoccurred during the subsequent startup. The licensee has programmatic controls in place to address rework, but these have not been used. The licensee has taken several additional steps to address this area. This includes a Human Performance Evaluation Program to aid in root cause identification, the establishment of a goal of no restart errors as a result of 12R work and a formalized administrative control procedure for post maintenance testing. The effectiveness of these measures to address rework concerns has not been assessed.

The licensee has significantly reduced its maintenance backlog and committed to achieving 100% equipment operability. As a result of this effort, the licensee is performing a greater quantity and more complex work during plant operation. The licensee made errors in coordinating some activities which resulted in equipment inoperability. Examples of this problem are a major bus outage and overlapping maintenance resulting in loss of stack gas sample flow. In these cases, there was a lack of understanding of the effect of the maintenance activity on plant equipment. This resulted, in part, from a lack of communication between work force and plant operations. The licensee has recognized the need for better communication between departments and strengthened the Plan of the Day status meeting and has added other daily planning meetings. Generally, these meetings are effective at surfacing plant problems and identifying who is responsible for corrective action.

In addition to the coordination of major maintenance efforts, work control has shown some weaknesses. Examples include: snubber repair in progress and the snubbers not being declared inoperable, inadvertently boring into the drywell shell, secondary containment boundary work degrading containment integrity, and diesel generator overhaul and testing. These examples demonstrate the need to continue to reinforce that work activities must be planned, approved and effectively controlled by the written work documents.

The licensee has undertaken several major initiatives to improve maintenance. The first was a reorganization of the maintenance division. This fundamentally changed the functional structure from one of "area" supervisors to one of "work discipline" supervisors. In addition, the licensee has implemented changes to the work management system to computerize and simplify the job order generation process. The effectiveness of this change has not been assessed, however, during implementation of the new computerized system, some inadequate work control occurred. Also, a Short Form Job Order was revised to change the scope to implement a modification to a plant cooling water system, and it was not treated as a modification.

Another licensee initiative is increased training for workers and development of a craft training facility. The licensee has also effectively used mockups for major maintenance tasks such as the feedwater line freeze seal and torus to drywell vacuum breaker repairs.

The licensee preventive maintenance program remains generally effective. It is a specific area of focus of licensee attention to implement measures to better identify specific preventive maintenance needs and more effectively track and predict equipment failures. These licensee initiatives are aimed at addressing long term equipment performance and includes the Life of System Maintenance Program (reliability centered maintenance). This has been implemented in a limited manner on the service and instrument air system.

The licensee continues to implement a strong surveillance test program. Some areas that require more attention are valve control during surveillance testing, acceptance of out of specification results, and that the test program include appropriate plant equipment (e.g., air accumulators and underground electrical cables). Surveillance test valve control is also assessed in the Operations area. In addition, NRC inspection noted a minor weakness in Measuring and Test Equipment (M&TE) control.

In general, the quality and accuracy of the maintenance and surveillance procedures are good. The licensee is active in identifying and correcting weaknesses as they arise. One specific area of observed weakness in surveillance testing is valve position control. Situations have occurred where the same individual performed the line up and the verification, procedural direction as to "as-left" positions were not clear, and procedural direction for valve positions was in error. Two of these situations resulted in equipment being misaligned and led to erroneous surveillance test data on the containment spray heat exchangers and inability to vent the isolation condensers. These valve mispositions have occurred, in part, due to the incompleteness of incorporating plant modifications into surveillance test procedures; and in part due to a lack of specific direction for valve positions.

The licensee is generally effective at identifying and addressing test discrepancies and establishing acceptance criteria, however, several examples of inadequate acceptance of test results have been seen. Out of specification results have been accepted without explanation (MSIV closure), acceptance criteria have been changed without a safety review (containment spray heat exchangers ΔP), IST out of specification problems without appropriate action (liquid poison), and questionable baseline data methodology (emergency service water). While generally effective, licensee performance shows the need for increased attention in the area of establishing acceptance criteria, and effectively evaluating test results.

The licensee has recognized the need for improvement in jumper control and also the need to evaluate and improve the testability of systems. On a system by system basis, the licensee is evaluating permanent design changes to improve testability. This outage, a modification was implemented on the core spray system to eliminate the need to lift leads and use jumpers. The licensee initiative to improve the testability of systems demonstrates their commitment to improve long term surveillance performance.

In conclusion, the licensee has in place generally effective maintenance and surveillance test programs. Significant progress has been made in reducing maintenance backlogs and a strong surveillance test program is being maintained. While some areas of weaknesses have been seen in both areas, the licensee is responsive to NRC concerns. Improvements have been seen in the areas of interdepartmental communications and the plant material condition. Some areas where weaknesses have been identified are: the identification and evaluation of maintenance rework items and surveillance repeat failures and the administrative control of the work management system. Overall performance in the areas of maintenance and surveillance has improved.

IV.C.2 Conclusion

Category 2.

IV.C.3 Recommendation

Licensee: Provide NRC with schedule for implementation of reliability centered maintenance control.

NRC: None.

IV.D Emergency Preparedness (249 Hrs., 3%)

IV.D.1 Analysis

During the previous assessment period, licensee performance in this area was rated Category 2. This rating was principally based upon observations of performance during the full participation exercise. Although overall performance was satisfactory, several recurrent weaknesses were identified. In addition, concerns were identified relative to slow staff response to an actual pager call-out from an Unusual Event.

During the current assessment period, a full participation exercise was observed and three routine safety inspections were conducted. The licensee issued a new Corporate Emergency Plan for both GPU Nuclear sites. Because of the significance of the changes, the Plan was submitted for NRC review prior to implementation. During the review it was identified that the Plan did not reflect the guidance of NRC Information Notice 83-28 concerning protective actions for a General Emergency. Acceptable changes were made to the Plan and it was subsequently implemented and distributed.

A full-participation exercise was conducted on May 11, 1988. The exercise scenario was written to involve a security threat. The licensee's overall response was satisfactory, and, in some areas, performance was excellent. These areas included control of a hazardous material spill, communication with the bomb disposal team, and relocation of command and control from the Emergency Command Center to the Technical Support Center. Several weaknesses were identified. The principal concerns were in the areas of contamination control, adequacy of support to the Emergency Support Director by the Technical Support Coordinator, and a question of authority for the Operations Support Center. The number of weaknesses identified is consistent with previous exercises. Overall exercise performance has been adequate with approximately the same number of weaknesses identified from exercise to exercise. This trend is apparently due to a lack of effectiveness of EP training.

During the first routine safety inspection, concerns were identified in two areas. The first involved training: lists of staff participating in drills and exercises were not maintained; and the Training Department's computerized database for tracking EP training was not up to date. The second was in the area of dose assessment and monitoring: the dose calculation model includes an excessively large default iodine component which could result in overly conservative protective action recommendations; and the volume of air samples collected by field teams is so large that the collection filter may saturate making the results unreliable.

During the second routine safety inspection, the inspectors determined that the licensee was responsive to many NRC concerns. The Emergency Dose Calculational Manual has been revised and many but not all calculational conservatisms have been removed. However, the concern regarding the default iodine component in the dose model and the suitability of field sampling equipment and methodology to collect iodine still had not been adequately addressed. This raises a concern regarding the licensee's approach to resolution of technical issues. The licensee demonstrated satisfactory response and personnel call-out to an actual Unusual Event during the inspection. Several improvements have been made to emergency response facilities and equipment. The licensee has renovated the Emergency Operations Facility, installed a remote siren verification system, replaced the auto-dialer call-in system by a computer based system, established a back-up Operational Support Center and is completing installation of a second siren activation system. Staffing is adequate both for emergency preparedness maintenance and in numbers of trained emergency response personnel.

Efforts to improve the emergency preparedness program are evidenced by the fact that Emergency Preparedness staff routinely handles 43 ongoing activities and at the time of the inspection was involved in 12 special projects. Some of these activities include 26 improvement actions in areas that have been completed or were in progress at the time of the inspection.

Oyster Creek Directors have become involved regularly in emergency preparedness training with the result that the need to reschedule training has almost vanished. The Training Department has also introduced several innovative approaches and a computerized data base is in place which tracks emergency preparedness training. The site and field team air samplers are being replaced by a system which will collect a sample without risk of saturation. Stack and turbine offgas monitoring systems are being upgraded, and an Evacuation Time Estimate update study is being undertaken. One issue which still requires licensee action is the training of Technical Support Center engineers in accident analysis other than Core Damage Assessment.

In summary, the licensee has committed adequate resources to emergency preparedness and has demonstrated adequate response to GPU and NRC identified concerns. The Director for the Environmental and Radiological Controls Division expends about twenty percent of his time on EP issues. Technical issues have been and are being resolved. Site management has become routinely involved in emergency preparedness activities and training has also responded to needs for improvement. There are no offsite problems. The persistent number of exercise weaknesses identified remains a concern. Finally, the licensee has not yet resolved NRC concerns regarding an overly conservative dose assessment model or the lack of training of TSC engineers in severe accident analysis.

IV.D.2 Conclusion

Category 2.

IV.D.3 Recommendation

None.

IV.E Security (134 Hrs., 1.5%)

IV.E.1 Analysis

Two special and one routine physical security inspection were conducted by region-based physical security inspectors. Routine inspections by resident inspectors were conducted throughout the assessment period. An NRC Regulatory Effectiveness Review was conducted in July 1988.

During the previous assessment period, the licensee's performance in this area was Category 1. This rating was based upon continued implementation of the licensee's self-assessment program, its enforcement history, a strong training and qualification program and the implementation of security equipment upgrades.

During this assessment period, the licensee's security systems were reviewed during a Regulatory Effectiveness Review (RER), and program implementation was evaluated during a routine and two special region-based physical security inspections. Continuing inspections by the NRC resident inspectors were conducted during the period.

In the two previous SALP reports, two longstanding regulatory issues were identified as being addressed by the licensee. Both of these issues were resolved during this period; however, resolution of one enhancement of the perimeter intrusion detection system required several schedule extensions, and the other, a control room issue, was initially found to be unacceptable by the NRC and another proposal was submitted, which was found to be acceptable. Considering the nature and complexity of the issues, the licensee demonstrated an adequate response to the NRC's concern, albeit, timeliness could have been better.

Corporate security management continued to be actively involved in all site security program matters. This involvement included visits to the site by the corporate staff to provide assistance, program appraisals and direct support in the budgeting and planning processes affecting program modifications and upgrades. Security personnel are also actively involved in the Region I Nuclear Security Association and other industry groups engaged in nuclear plant security matters. This demonstrates program support from upper level management.

The licensee continued the use of self-inspection techniques to provide oversight of security program implementation and measurement of personnel performance. A well developed training and qualification program and on-the-job performance evaluations contributed to minimize personnel errors by members of the security organization during routine operations. However, during outages, maintenance projects resulted in the degradation of vital barriers, without prior notification of the security department, on several occasions. Additionally, on one occasion, operations personnel did not notify security personnel that a protected area barrier had been degraded. Because security was not notified of these degraded barriers, compensatory measures were not implemented for extended periods. Also, during the current outage, members of the security force had to work a significant amount of overtime to support the outage work. This may have contributed to a reduction in the alertness of security force members since on two separate occasions security force members who were controlling access to vital areas allowed individuals whose access authorizations had expired to enter the vital areas. These cases did not result in major degradation in security, but they did have the potential to do so. Management had planned to augment the security force with fifteen temporary contract watchmen to support the outage work, however, only five were able to successfully pass licensee screening and training requirements.

The licensee submitted two security event reports in accordance with 10 CFR 73.71 during this assessment period. In addition, on two occasions, the NRC identified events that should have been reported but were not. A contributing factor in the failure to make the required reports was a misinterpretation of 10 CFR 73, Appendix G.

The RER, which was conducted in July 1988, reviewed the licensee's ability to meet the general performance requirements of 10 CFR Part 73. The RER report identified strengths in some areas and contained recommendations for upgrades in other areas. The licensee is reviewing the report and has not yet responded.

During this assessment period the licensee submitted four revisions to the Security Plans in accordance with provisions of 10 CFR 50.54(p). Two of the revisions were reviewed and found to be acceptable and two revisions are currently under review by the NRC. The licensee also submitted revisions to the Security Plan in response to the 10 CFR 73.55 Miscellaneous Amendments and Search Requirements. The revisions contained commitments which meet the objectives of the rule change and were found to be acceptable. The licensee responses to requests were not timely but were, in general, technically sound.

In summary, the licensee continues to maintain an effective, performance-oriented security program. Management attention to and support of the program are evident in most aspects of the program implementation. However, weaknesses were observed in the management efforts expended to maintain security awareness among other site personnel to maintain adequate security staffing during extended outages, and to understand NRC's reporting requirements for security events led to an overall decline in performance during the period.

IV.E.2 Conclusion

Category 2.

IV.E.3 Recommendation

None.

IV.F Engineering/Technical Support (1716 Hrs., 20%)

IV.F.1 Analysis

During the previous assessment period, licensee performance in this area was rated Category 3. This rating was principally based on multiple examples of inadequate root cause analysis, ineffective problem solution once the root cause was identified, poor technical reviews, long outstanding unresolved problems, delays in implementation of NRC requirements, failure to meet commitments, communication problems, weakness in vendor control, and the fact that little change has been noted over the period of time covered by the past three SALPs. The previous SALP board also noted continued inconsistent performance during the assessment period. The licensee was encouraged to expedite completion of the technical support self assessment (TSSA) (which was started by the licensee in response to a recommendation by the SALP Board in 1986) and initiation of an associated corrective action plan.

During this SALP period, the quality of engineering support activities continued to be inconsistent. Early in the SALP period, the licensee was actively engaged in addressing the weaknesses and concerns identified in previous SALP Reports. These initiatives slowed down significantly during the assessment period due to events that required the licensee's immediate attention and resources. Thus, the licensee failed to complete the TSSA and initiate corrective action as recommended by the previous SALP Board.

The licensee has taken several positive steps to enhance the effectiveness of the Corporate Technical Function Division. Programs were developed and established to incorporate safety perspective in engineering work prioritization, to trend and analyze technical information, to enhance the quality of root cause analyses, to improve engineering configuration management, design basis documents and as-built drawings, to conduct Safety System Functional Inspections and to provide formalized training to improve the quality and timeliness of safety reviews and plant modifications. Architect Engineers (AE) were placed on retainer and effectively used to supplement the licensee's staff, providing the licensee with a wide spectrum of engineering resources at short notice.

As a result of the above efforts, the following improvements were noted in the support provided by the corporate Technical Function Division staff. Unlike previous outages, the corporate staff was able to complete practically all engineering work prior to the commencement of the recently completed 12 R outage. The engineering work back log was substantially reduced during this assessment period. Prompt, conservative and comprehensive corrective actions for ISI and Appendix R issues were developed and provided to the site. The engineering support provided to resolve the isolation condenser steaming issue and the associated AIT concerns was thorough, well coordinated, of good quality and was provided in a timely manner. The licensee's efforts to address NRC Bulletins 79-02 and 79-14 were also extensive and of good quality. However, it must be noted that it took the licensee almost ten years to complete this task.

In spite of the above improvements in capability and performance, several instances of inadequate engineering and technical support were noted. Examples of these problems are discussed later in this section. Since similar problems were not observed when site and corporate resources were both focused on the same technical issues, it appears that the licensee still does not have an effective mechanism to determine when site and corporate coordination is necessary or to always engage and employ appropriate combinations of licensee resources to resolve site engineering problems.

Efforts are being made to improve communication between engineering and operations organizations. Corporate policy is being revised to encourage rotational assignments for engineers between corporate and sites. However, instances of inadequate communications between site and corporate personnel continue. For example, the engineering personnel did not adequately inform the operations personnel about a potential diesel generator bus over loading condition. Specific operator actions are required to avoid over loading of this bus. The necessary operator training or direction was not established as operations personnel were not aware of the required operator actions. Instances in which plant changes were implemented without involving the established modification process, site engineers or corporate engineers include: the replacement of a reactor coolant system sampling valve with another valve that was three times heavier, the removal of a resin column under a work request and not under the configuration control requirements, and the change out of an IRM range switch without the system engineer involvement. As stated previously, when corporate and site technical personnel worked together, good designs and engineering resolution were normally produced.

Instances of lack of inquisitiveness to understand technical issues and to identify root causes of problems continue. For example, upon identification by the NRC of the anomalous steam line temperature during the first isolation condenser steaming event, the licensee performed a literature search for explanation. This literature search yielded no explanation and no further evaluation was conducted by the licensee until the second isolation condenser developed a similar condition. Similarly, the licensee identified several significant weaknesses in the activities related to NRC Bulletin 79-02 and 79-14 during last SALP period; however, the licensee decided to take no actions until concerns were raised by the NRC inspectors. As discussed further in the safety assessment/quality verification section, the licensee's initial resolution of the Preliminary Safety Concern (PSC) involving the inoperability of the automatic depressurization system was another clear example of shallow analysis of a newly identified problem.

Concerns for the adequacy of engineering resource commitments to the resolution of long standing problems remains. Examples of these problems include: the erratic operation and failure of the intermediate range monitors; degradation of the emergency service water system discharge butterfly valve due to throttling; inadequate emergency service water pump performance; and erratic performance of acoustic monitors.

As stated in the Safety Assessment/Quality Verification section of this report, the safety review process was generally good and the quality of the reviews improved. However, the licensee does not always appropriately document the basis for conclusions. For example, when the licensee's re-analysis of the torus-attached piping indicated that the calculated stresses might be above allowables, the licensee determined the matter was not reportable to the NRC. When questioned by the NRC, the licensee maintained that there was no safety significance to this issue as the analysis was overly conservative, but had no documented analysis to back up that position. Subsequently, the licensee completed a state-of-the-art- analysis and was able to demonstrate that the stresses in question were within allowables.

The accuracy, quality and availability of plant engineering drawings remain a problem. Although the SSOMI found drawings representing recent modifications to be good and to generally reflect as-built conditions, routine NRC inspections and discussion with operators determined that older drawings are frequently inaccurate, unreadable or not easily locatable. Problems precipitated by these deficiencies are illustrated in the following examples: (1) inadequate as-built drawings contributed to the stack gas monitor being made inoperable during the performance of maintenance; (2) relanding of a loose wire in the control room resulted in a plant response different from that expected, based on a review of plant drawing, and (3) an operator was unable to identify the source of power to the reactor building to torus vacuum relief valve since the appropriate drawings were not readily available.

In summary, the licensee responded positively to the concerns identified in previous SALP reports. They initiated measures to enhance the effectiveness of the corporate engineering division, improved the quality of root cause analysis and engineering support, and reduced engineering work back log. However, examples of inadequate engineering solutions, insensitivity to technical problems, failure to meet commitments, lack of reliable design basis documents and failure to resolve long standing technical deficiencies continue to exist. The licensee's engineering resources are not as effectively used at this site as at TMI, although both are supported by the same corporate staff. The difficulty in correcting the recurring and long standing problems at this site may be explained by the volume of the issues; the latter, in large part, is precipitated by the vintage and age of the plant. It may also be explained by the lingering coordination problems and communication gap between this site and the corporate engineering office. However, the licensee has made significant progress in resolving issues and the performance for the assessment period has shown improvement, particularly with regard to corporate activities.

IV.F.2 Conclusion

Category 2.

IV.F.3 Recommendations

Licensee: None.

NRC: Perform a SSFI during the fourth Quarter of FY 89.

IV.G Safety Assessment/Quality Verification (417 Hrs., 5%)

IV.G.1 Analysis

In previous SALP reports, Assurance of Quality and Licensing Activities were evaluated in separate sections of the report. This new section (Safety Assessment/Quality Verification) has been created not only to consolidate those two sections but also to encompass activities such as safety reviews, responses to NRC-generated initiatives such as Generic Letters and bulletins and to provide a broad assessment of the licensee's ability to identify and correct problems related to nuclear safety.

In the previous SALP, Assurance of Quality and Licensing Activities both received Category 2 ratings. At that time, it was noted that the trend indicated that the licensee had improved in the licensing area. The SALP report identified as strengths management's commitment to safety and quality training programs for management, craft personnel, and corporate level personnel, and other changes made to improve overall management effectiveness and good communications between licensee management and NRC staff. Weaknesses included procedure compliance, unplanned outages from equipment malfunction, engineering support, and operations. Licensee performance regarding timely submittals of LERs was also identified as an area requiring improvement.

During the current SALP period 78 licensing actions were under review. Action has been completed on 39 of these actions. Many of the significant actions completed involved complex issues and were generally well planned, technically sound, showed thorough licensee analysis and in most cases were timely. Examples include upper drywell shell corrosion problems, compliance with ATWS Rule (10 CFR 50.62), and new curves for operation beyond 10 effective full power years. However, there were some issues where extensive staff interaction was required to resolve issues and some miscellaneous amendments and SEP items were slow being submitted.

The licensee's safety review process is good and in general the quality of reviews has improved. Also, the licensee is participating through industry groups to improve overall guidance in this area. NRC review of the 50.59 review program at Oyster Creek identified that in most cases reviews were of high quality. However, in one case the licensee's justification was not clearly discussed and resulted in accepting a situation not specifically authorized by regulation.

The staff has also audited the overall erosion/corrosion monitoring program involving the pipe wall thinning of high energy carbon steel piping systems. As a result of the audit, the staff concluded that in general the licensee's program is above industry standards. The plant has appropriate controls in place and management has made a commitment to continue to implement an erosion/corrosion control program at Oyster Creek.

The licensee's QA program remains generally effective. Staffing is adequate and training is appropriate. QA monitorings were detailed, comprehensive, and conducted by knowledgeable personnel. The licensee has a comprehensive system of audits to verify conformance with all aspects of the QA program. Audits were thorough and comprehensive. The licensee has also substantially revised their QA plan to enhance oversight and refocus QA responsibility.

Followup to QA findings in most instances was found to be appropriate. However, in several instances, such as the inadequate safety review program for maintenance short forms, the QA findings had to be escalated due to insufficient corrective action and slow response from management. Also, the finding that certain plant modifications were being used by the plant before completing the formal modification turnover process was not addressed. QA reviewed storage of spare parts in shop spaces and took some corrective action, but did not document those findings. This is one instance in which both improper activities were being conducted and QA was ineffective in correcting the condition.

In the area of procurement and spare parts control, NRC reviews have identified deficiencies which reflect weaknesses. These included procedural problems and the absence of controls for spare parts housed outside the warehouse. The latter problem had been identified by the licensee's QA organization, but effective corrective action had not been implemented. Improper control of shop spare parts permitted defective components to be installed in source range monitors prior to refueling.

Satisfactory performance of the licensee's offsite review committee (GORB - General Office Review Board) was noted. The issues reviewed and the board's presentation of findings to management is satisfactory. Improvement in the onsite review group (PRG - Plant Review Group) was also noted particularly in the areas of review of events and the more prompt issuance of procedure changes.

During this SALP period, NRC inspectors and the licensee were made aware of complaints dealing with management relations which fostered poor worker attitudes, low morale, high turnover rates, and low productivity. A completed licensee investigation was thorough and made certain recommendations aimed at improving worker/management relations.

The licensee continues to maintain an adequate training facility and staff. One deficiency noted was the submittal of out-of-date and incomplete training material for NRC exam preparation. Also, committed training of fire watches was not conducted. A significant improvement has been made in the training of maintenance mechanics. Maintenance management provided a new mechanical maintenance laboratory for improved on-the-job training. Plant engineering also maintains their own training program for the purpose of providing in-depth understanding of plant systems. It was noted little interaction between operators and the newly created system engineers was taking place. The inservice inspection staff demonstrated a good understanding of ASME Code and regulatory requirements indicating effective training in this area. The licensee is continuing to apply the concept of teamwork and leadership to programs in the organization.

Problems were identified with operator training on EOPs. As a result, contracted time has been increased on a generic simulator. A plant specific simulator will not be available until October 1990.

GPUN maintains a policy for its employees which stresses a high standard of integrity and procedure adherence. This is frequently reinforced through training and memoranda from management. In order to improve performance at Oyster Creek, an employee attitude survey was conducted and efforts were made to resolve concerns expressed. Surveys were conducted to assess personnel attributes in order to balance shift crews to maximize shift performance. Also, the licensee has within the Onsite Safety Review Group initiated a Human Performance Evaluation System to further aid in providing recommendations to improve operations. The group's efforts were hampered due to the inability to provide a full staff. In general, the licensee is taking many initiatives to improve performance.

During the defueling recently conducted, numerous errors occurred. Each of these individual errors were appropriately critiqued and corrective action taken. In an effort to improve defueling activities, direct involvement of the Vice President and Director, Oyster Creek, occurred. The direct involvement of a high level of management becoming heavily involved in operations when other measures appear to have failed is considered to be a positive move.

Quality Assurance audits of radiological controls effluent and surveillance activities was good. However, due to the overall poor performance of the onsite radiation protection program, it was concluded that the quality assuring activities such as audits, assessments, and critiques were not effective in assuring quality.

The licensee has in place a procedure by which employees may bring safety concerns to the attention of management. These issues are processed as Preliminary Safety Concerns (PSC). Although a good initiative, several problems have been identified, including timeliness of resolution, quality of reviews performed and a perception on the part of some licensee employees that the system will not effectively resolve issues. In two cases, superficial reviews were performed and the items closed. Subsequent review identified that corrective action was necessary. In these instances, the PSC process failed to correct the valid safety concerns. NRC assessment overall is that the PSC program is not performing as the licensee intended.

The quality of the licensee's LERs continues to be good. The late reporting of LERs was a problem in the past. This deficiency has been corrected. Supporting data and summaries provide additional information related to LERs. Significant findings associated with LERs include one instance where control room procedures were not updated to reflect conditions described in a report, an instance where information was not reported clearly, and one instance which described a condition in which an improvement in control room command responsibilities may have prevented a violation. In another instance, an incorrect fuel zone level instrument evaluation was performed. This was not recognized by the licensee and the item was closed. One noteworthy finding was that LERs reported conditions that had been previously identified in Preliminary Safety Concerns. Overall, LERs reported 17 events related to Technical Specification requirements, 6 related to design criteria, 4 to Appendix R, and one to Appendix J. In general, no single cause could be attributed as responsible for any significant number of events.

In summary, management attention and involvement were responsive to licensing issues, and licensing problems have generally been dealt with effectively and in a timely manner. QA monitoring and audits were generally good; however, correcting of some QA findings was not timely. Offsite committee performance is good and improvement in onsite committee performance has been noted. The licensee has in place policies which stress high standards of integrity. A strong emphasis on training is being maintained. Deficiencies needing attention were noted in the areas of installation and storage of shop spare parts. A more significant concern which requires prompt and thorough resolution is the effectiveness of the Preliminary Safety Concern process to identify and correct deficiencies.

IV.G.2 Conclusion

Category 2.

IV.G.3 Recommendation

Licensee: Review current and previously closed Preliminary Safety Concerns to verify that no outstanding safety issues remain unresolved.

NRC: None.

SUPPORTING DATA AND SUMMARIES

A. Investigations and Allegations Review

A.1 Investigations

The NRC Office of Investigations completed two investigations during the SALP period. One involved a self-initiated investigation to determine whether or not licensee statements made to NRC inspectors constituted a willful material false statement. The other involved investigation into the reported destruction of a portion of an alarm tape by a licensed control room operator following the violation of a Technical Specification Safety Limit.

A.2 Allegations

During this assessment period, seven allegations were received and acted upon. One remains open and five were closed. One was closed with the subject incorporated into a future inspection plan. Only one allegation was substantiated. The one open allegation was turned over to the licensee for evaluation.

B. Escalated Enforcement Actions

B.1 Civil Penalties

One civil penalty involving a Technical Specification Safety Limit Violation that occurred during the previous SALP period, was issued during the current evaluation period.

B.2 Orders

None.

C. Confirmatory Action Letters

None.

D. Licensee Event Reports

During the last assessment period 45 LERs were generated and during this period 46 reports were generated with four of these identified as voluntary reports. Reports for the last period were generated at the rate of 3.9/month and for this period at the rate of 2.8/month.

The greatest single cause for the events reported is personnel error. Eleven of the 46 LERs reported (24%) were attributed to personnel error. The next largest cause was attributed to equipment failure which was 8 (17%). The number of LERs attributed to personnel error is decreasing. During the last period 64% of the reports were attributed to personnel error. Analysis of the cause of personnel errors did not indicate a general training problem.

Four events resulted from reactor scrams when shutdown, generally due to neutron system noise spikes. Three were due to standby gas treatment system initiations resulting from water accumulation in the offgas line. Action has been taken to correct this condition.

To the extent possible during the NRC review of the LERs, where applicable, a contributing cause was assigned. The most frequently noted contributing cause was judged to be lack of management attention/poor supervision. Eleven of the 46 LERs (24%) had this attributed as a contributing cause.

The most frequent methods of identification of the LERs were control room indication 15, surveillance testing (6) and design reviews (5). Types of equipment involved were mechanical 18, instrumentation (12) and electrical (6). No specific conclusions were drawn from these statistics.

The most frequently identified licensee corrective actions specified in the reports were procedure changes (16), failed equipment repaired (10), increased training (8), and making the report required reading (10). The effectiveness of the corrective actions are difficult to assess, particularly the required reading of the LERs.

Overall, LERs reported Technical Specification violations (17), violations of design criteria (6), of Appendix R (4), and one of Appendix J. In general, no single cause could be attributed as responsible for any significant number of events.

Not identified as an LER at Oyster Creek but reported by another facility was the design service water temperature being exceeded. The licensee has determined the 85 degree design service water temperature was exceeded. However, to date no determination of reportability has been made nor has the licensee's evaluation of the effect of a higher than design service water temperature been completed.

TABLE I

ENFORCEMENT ACTIVITY

A. Enforcement Activity

Functional Area	NUMBER OF VIOLATIONS BY SEVERITY LEVEL V	IV	III	II	I	DEV	TOTAL
Plant Operations	1	3				1	5
Radiological Controls		9					9
Maintenance/Surveillance	1						1
Emergency Preparedness							
Security	1	3					4*
Engineering/Technical Support	2	8					10
Safety Assessment/Quality Verification	1						1
TOTAL	6	23				1	30*

*One additional security violation is pending final enforcement action determination.

B. Violation Summary

REPORT NUMBER	REQUIREMENT	SEVERITY LEVEL	FUNCTIONAL AREA	DESCRIPTION
87-28	10 CFR 50 App. B, Criterion XII	V	Maintenance/ Surveillance	Identified maintenance and test equipment discrepancies not evaluated as required.
87-37	Physical Security Plan	IV	Security	Vital area barrier found to have been degraded.
87-39	T.S. 6.13, High Radiation Area	IV	Radiological Controls	Worker entered high radiation area without dose rate instrument.

REPORT NUMBER	REQUIREMENT	SEVERITY LEVEL	FUNCTIONAL AREA	DESCRIPTION
87-39	T.S. 6.13, High Radiation Area	IV	Radiological Controls	Control of high radiation area access.
87-39	T.S. 6.11, Radiation Protection Process	IV	Radiological Controls	Failure to adhere to the requirement of a radiation work permit.
87-41	T.S. 6.8.1, Station Procedures	IV	Operations	Failure to follow procedures relating to positioning of valves.
88-02	10 CFR 50.59	IV	Engineering/ Tech Support	Failure to perform safety evaluation for for reactor building heating system being out of service for approximately two years.
88-02	T.S. 6.8.1, Station Procedures	IV	Engineering/ Tech Support	Inadequate procedure reviews.
88-04	T.S. 6.8.1, Station Procedures	IV	Engineering/ Tech Support	Controls to effect procedure revisions.
88-04	T.S. 6.8.1, Station Procedures	IV	Engineering/ Tech Support	Failure to adhere to procedures relating to snubber operability.
88-04	10 CFR 50, App. B	IV	Engineering/ Tech Support	Failure to take prompt corrective action to a nonconforming condition identified during snubber surveillance.
88-11	10 CFR 10.101 (b)	IV	Radiological Controls	Failure to conduct adequate surveys.
88-13	T.S. 6.11, Procedure for Personnel Radiation Protection	IV	Radiological Controls	Failure to adhere to radiation work permit requirements.
88-14	T.S. 3.12.A.1, Fire Detection Instrumentation	V	Operations	Fire detection instrumentation pressure switch valved out.

REPORT NUMBER	REQUIREMENT	SEVERITY LEVEL	FUNCTIONAL AREA	DESCRIPTION
88-14	Fire Protection Program	DEV	Operations	Inadequate training program for ignition source fire watches.
88-15	10 CFR 50.59	IV	Engineering/ Tech Support	Performance of an improper safety evaluation.
88-21	T.S. 3.4.C, Containment Spray and Emergency Service Water System Operability	IV	Operations	Operation with one containment spray loop out of service for a period greater than allowed.
88-21	T.S. 6.8.1, Station Procedures	IV	Operations	System placed into service without current valve checkoff.
88-21	T.S. 6.8.1, Station Procedures	IV	Engineering/ Tech Support	Modification placed into service without control room drawing being updated.
88-28	10 CFR 50, App. J	IV	Engineering/ Tech Support	Containment airlock not tested as required.
88-29	10 CFR 50, App. R	V	Engineering/ Tech Support	A failure to meet Appendix R requirements was promptly corrected and no written violation was issued.
88-31	10 CFR 20.201, Surveys	IV	Radiological Controls	Failure to conduct a survey.
88-31	T.S. 6.11, Radiation Protection Program	IV	Radiological Controls	Worker failed to comply with the requirements of a radiation work permit.
88-32	10 CFR 50.54 (p), Physical Security System	V	Security	Change to physical security plan without Commission approval.

REPORT NUMBER	REQUIREMENT	SEVERITY LEVEL	FUNCTIONAL AREA	DESCRIPTION
88-33	10 CFR 50, App. B	IV	Safety Assessment/Quality Verification	Failure to control storage of items outside warehouse.
88-33	Physical Security Plan	IV	Security	Degraded vital area barrier.
88-33	10 CFR Part 73.71, App. G, Sect. I.(c)	IV	Security	Failure to report degraded vital area barrier.
88-35	T.S. 6.8.1, Station Procedures	V	Engineering/Tech Support	Several procedures issued without approval signatures.
88-37	10 CFR 20.201 (b)	IV	Radiological Controls	Failure to evaluate radiation hazard created by control rod drives awaiting processing.
88-37	T.S. 6.8.1, Station Procedures	IV	Radiological Controls	Inadequate procedure for the control of rod drive work.

TABLE II

LISTING OF LERS BY FUNCTIONAL AREA

AREA	A	B	C	D	E	X	TOTALS
Operation	5	4		2	1	1	13
Radiological Controls	2	1					3
Maintenance/Surveillance	2	4		6	2		14
Emergency Preparedness							
Security							
Engineering/Technical Support	6	7		2	1		16
Safety Assessment/Quality Verification							
TOTALS	15	16		10	4	1	46

Cause Codes*:

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

*Cause Codes in this table are based on inspector evaluation and may differ from those specified in the LER.