

SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-285/89-19

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION

May 1, 1988, through April 30, 1989

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance based upon this information. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. It is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful feedback to the licensee's management regarding the NRC's assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on June 13, 1989, to review the observations and data on performance, and to assess licensee performance in accordance with NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." The 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 the Fort Calhoun Station for the period May 1, 1988, through April 30, 1989.

The SALP Board for the Fort Calhoun Station (FCS) was composed of:

- J. L. Milhoan, Director, Division of Reactor Projects
- L. J. Callan, Director, Division of Reactor Safety
- F. J. Hebdon, Director, Project Directorate IV, NRR
- R. E. Hall, Deputy Director, Division of Radiological Safety and Safeguards
- T. F. Westerman, Chief, Reactor Project Section B
- P. D. Milano, Project Manager, Project Directorate IV, NRR
- P. H. Harrell, Senior Resident Inspector, Fort Calhoun Station
- R. P. Mullikin, Project Engineer, Reactor Project Section B

The following personnel also participated in the SALP Board meeting:

- B. Murray, Chief, Reactor Programs Branch
- R. E. Baer, Chief, Facilities Radiological Protection Section
- W. C. Seidle, Chief, Test Programs Section
- J. E. Gagliardo, Chief, Operational Programs Section
- J. L. Pellet, Chief, Operator Licensing Section
- H. F. Bundy, Reactor Inspector
- N. M. Terc, Emergency Preparedness Specialist
- A. B. Earnest, Physical Security Specialist
- L. L. Wheeler, Section Chief, Inspection and Licensing Program Branch
- A. Bournia, Project Manager, Project Directorate IV, NRR

A. Licensee Activities

1. Major Outages

The licensee shut down the plant for refueling on September 27, 1988, and returned it to service on January 29, 1989. This was the only outage during this assessment period.

2. License Amendments

During this assessment period, nine Technical Specification amendments were submitted by the licensee. Some of the more significant amendments are listed below:

- ° Revision of the reactor coolant system pressure-temperature limits for heatup and cooldown.
- ° Changes for Cycle 12 operations.
- ° Change of minimum allowable temperature for the safety injection and refueling water tank.
- ° Change of minimum requirements for operability of the raw water system pumps.

3. Major Modifications

The major modifications made during this assessment period include the following:

- ° Removal of the first stage blading on the main generator turbine
- ° Extensive remodeling of the control room envelope
- ° Installation of a reactor coolant system hot leg level indicator
- ° Installation of a diverse scram system

B. Direct Inspection and Review Activities

NRC inspection activity during this SALP evaluation period included 50 inspections performed with approximately 6,065 direct inspection hours expended. The inspections included an operational safety team inspection (OSTI), maintenance team inspection, and safety enhancement program team assessment.

C. Safety Enhancement Program Development and Implementation

During this assessment period, a Safety Enhancement Program (SEP) was developed by the licensee. The SEP was generated by the licensee to address the concerns identified as a result of an appraisal of the operation and management of the FCS by an independent contractor. The independent appraisal was initiated in response to problems identified by NRC personnel during review of the instrument air event that occurred in July 1987.

In addition, the SEP also includes items identified by the NRC that would improve the overall effectiveness of the operation of the facility. The SEP encompasses a wide variety of activities related to all the functional areas discussed in this assessment report.

In April 1989 an NRC assessment team performed an extensive review of the status of the licensee's implementation of the SEP items. As a result of the assessment, the team noted that the licensee was making satisfactory progress toward implementation of the SEP items. Some SEP items may require additional management attention to ensure completion in a timely manner.

The team also noted, for those items that have been substantially completed, that positive indications of improved performance were apparent. However, the team noted that many SEP items had not been "institutionalized" to ensure the commitments would be in effect after the SEP is considered complete. The licensee subsequently established a corporate SEP policy document and is in the process of establishing policies and procedures which incorporate the SEP, where appropriate. The licensee has demonstrated overall progress in improving their capability to provide management leadership and oversight of the diverse elements related to the conservative operation of the FCS.

The NRC will continue to monitor the implementation of the SEP. Additional inspections will be performed during the new SALP period.

II. SUMMARY OF RESULTS

Overview

The SALP Board concluded that the management and operation of the FCS has improved during this assessment period. The licensee issued, and is in the process of implementing, the actions specified in the SEP. The reorganization of the Nuclear Operations Division has resulted in increased management attention to the day-to-day operations of the facility.

Due to the large number of commitments made by the licensee in the SEP, a large volume of work has been performed by the licensee. Based on reviews made at the end of this assessment period, the Board felt that the licensee was capable of handling the large number of commitments and still manage day-to-day activities. However, the NRC is concerned with the licensee's workload since many of the commitments are scheduled for completion in the near future.

New issues, viewed by the SALP Board as not bound by the SEP, were identified. It was the Board's opinion that security management was so focused on the implementation of the actions in the security upgrade program that daily activities of the security force were neglected. Also, the number of licensed operators remain relatively small.

During this SALP period the licensee has improved their capability to respond to plant events and technical issues.

Items of improvement included the completion of the training facility, overall plant appearance, establishment and staffing of the systems engineering organization, and the establishment of the Nuclear Safety Review Group that provides an independent review of plant events and anomalies.

However, the SALP Board concluded that there were areas where improvements were needed. The licensee should ensure that all personnel follow all procedures as written or initiate changes as appropriate.

Problems were also identified with the technical content of some procedures. The technical adequacy of procedures was a concern identified during the previous assessment period.

For the first time in 3 years, the program has been rated as satisfactory. However, weaknesses continued to be identified with the licensed operator requalification program.

The audits being performed by QA were found to be compliance-oriented instead of being performed on an operational safety approach.

The licensee's performance is summarized in the table below, along with the performance categories from the previous SALP evaluation period.

<u>Functional Area</u>	<u>Previous Performance Category (10/01/86 to 04/30/88)</u>	<u>Present Performance Category (05/01/88 to 04/30/89)</u>
A. Plant Operations	2	2
B. Radiological Controls	3	2
C. Maintenance/Surveillance	N/A*	2
D. Emergency Preparedness	2	2
E. Security	2	2
F. Engineering/Technical Support	N/A*	2
G. Safety Assessment/ Quality Verification	N/A*	2
H. Maintenance	2	N/A*
I. Surveillance	2	N/A*

J. Fire Protection	2	N/A*
K. Outages	2	N/A*
L. Quality Programs and Administrative Controls Affecting Quality	3	N/A*
M. Licensing Activities	2	N/A*
N. Training and Qualification Effectiveness	3	N/A*

*NRC Manual Chapter 0516 was revised on June 6, 1988. This evaluation was performed in accordance with the revised manual chapter. The major change involved restructuring of the functional areas.

III. CRITERIA

Licensee performance was assessed in seven selected functional areas. Functional areas normally represent areas significant to nuclear safety and the environment. The following evaluation criteria were used, as applicable, to assess each functional area:

- A. Assurance of quality including management involvement and control;
- B. Approach to resolution of technical issues from a safety standpoint;
- C. Responsiveness to NRC initiatives;
- D. Enforcement history;
- E. Operational events (including response to, analyses of, reporting of, and corrective actions for);
- F. Staffing (including management); and
- G. Effectiveness of training and qualification program.

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

Based on the NRC assessment, each functional area evaluated was rated according to three performance categories. The definitions of these performance categories are as follows:

1. 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.

2. Category 2. Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities is good. The licensee has attained a level of performance above that needed to meet regulatory requirements. Licensee resources are adequate and reasonably allocated so that good plant and personnel performance is being achieved. NRC attention may be maintained at normal levels.
3. 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.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

The assessment of this area consists of the activities of the licensee's operations staff. This functional area includes activities such as plant startup and shutdown, power operation, system lineups, logging plant conditions, responding to off-normal conditions, manipulating the reactor and auxiliary controls, plant housekeeping, and control room professionalism.

This area was inspected on a continuing basis by the NRC resident inspectors and periodically by other NRC inspectors. An Operational Safety Team Inspection (OSTI), performed in depth and comprehensive reviews of the performance of operations personnel, organizations providing support to the operations staff, and management oversight of the operation of the FCS.

The plant was operated during this assessment period without an unplanned manual or automatic reactor trip. The licensee has not experienced an automatic or unplanned manual trip since August 1986. On September 27, 1988, the plant commenced a refueling outage, after completing a continuous power operating cycle of 477 days that started on June 8, 1987.

The licensee maintained a highly experienced and knowledgeable group of licensed senior reactor operators (SRO) and reactor operators (RO). The operations staff was stable during this assessment period with a very small turnover rate of licensed on-shift operators. Staffing was at a level that permitted the

licensee to maintain a six-shift rotation, except for vacation schedules in the summer months. The use of overtime has not been a concern.

The licensee's staff currently includes 27 individuals (14 on-shift and 13 staff personnel) that hold an SRO license and 10 (8 on-shift and 2 personnel in training) individuals that hold an RO license. However, compared to other plants in Region IV, this represents a small pool of licensed on-shift personnel. The size of the licensed staff was a concern to the NRC during the previous assessment period and it continues to be a concern even though the licensee's operating staff increased by four SROs and two ROs during this assessment period. The licensee is in the process of adding three additional ROs to the operator staff and upgrading two ROs to SROs. The additional licenses and upgrades are scheduled to be completed in 1989. The increased number of licensed operators was viewed by the Board as a safety enhancement. This would provide an increased pool of qualified operating staff to respond to operating challenges, as well as an increased personnel source for other positions within the OPPD nuclear divisions.

The licensee has increased the number of authorized operations positions (licensed and nonlicensed operators) from 50 in early 1988 to the current level of 65 positions. The licensee added 11 personnel during this assessment period and anticipates that the remaining 4 positions will be staffed by the end of 1989.

During this assessment period, licensed on-shift operators exhibited a strong and dedicated commitment toward the performance of their duties. Operations personnel developed and issued their own professional code of conduct to formally establish the elements that constitute the level of performance expected of all professional operators. Plant operators (licensed and nonlicensed) were aware of plant conditions and work activities being performed under their control.

On a number of occasions during this assessment period, operations personnel responded to plant perturbations and prevented the perturbations from leading to more significant problems that may have caused challenges to safety-related systems.

A number of problems were identified during this assessment period that required management to address the operability of equipment and components. The problems were identified during activities related to the licensee's reconstitution of the design basis, self-initiated reviews, and inspections performed by NRC personnel. During review of each item, it appeared that management took a conservative approach when addressing problems.

The shift supervisors were noted to be involved with the management decisions made on the determination of equipment operability. The involvement of shift supervisors in the decision process, as well as the conservative approach for determination of equipment operability by management, was not evident during previous assessment periods.

The licensee's reporting of plant events and anomalies was reviewed on a number of occasions to verify compliance with 10 CFR Parts 50.72 and 50.73. For each case reviewed, it was noted that the reports were timely, conservatively implemented, and provided the appropriate level of detail.

During this assessment period, isolated problems were identified with the performance of the operations staff. Most notable was identification of occasional failures by operations personnel to use, follow, and change procedures when required. The use of procedures has been an ongoing concern during this assessment period, not only in the operations department, but in the other FCS organizations. Although no specific problems have resulted from personnel failing to follow procedures, it is necessary that management create an attitude and culture for all facility personnel that ensures procedural compliance is established, implemented, and maintained for optimum safe operation, maintenance, and management of the FCS. A contributing factor appears to be that personnel are extremely familiar with the evolutions they perform and do not rely on the instructions provided in procedures to complete an evolution. Also related to this concern, is a problem that many safety-related procedures do not provide the appropriate level of detail for performance of a plant evolution. It is recognized that the licensee is currently involved in an ongoing procedures upgrade project.

During performance of the OSTI, NRC inspectors noted that access to the control board area was not being adequately controlled. Personnel were randomly entering the controls area without an obvious reason. The licensee took corrective actions during the outage by extensive modification of the control room envelope. The shift supervisor's office was moved from the rear of the control room to just inside the main control room entrance. Requirements for entry into the controls area was established and implemented by prohibiting entry without the permission of an on-shift licensed operator.

During previous assessment periods, concerns were identified with the status of plant labeling, housekeeping, and appearance. The licensee has completed repainting approximately 40 percent of the plant (both safety- and nonsafety-related areas), established a scheme for color coding each plant system, initiated a new component labeling program using tags that

contain the component number and identification description, and upgraded efforts to improve plant cleanliness. During this assessment period, only a few items were identified where housekeeping activities needed additional management attention.

Additional tours of the plant by management and other personnel are needed. During tours of the plant by NRC inspectors, numerous items were identified that did not conform to established requirements or that required additional management attention.

In the previous assessment period, a concern was identified with the development and implementation of career paths for licensed on-shift operators. The licensee has initiated actions to address this concern.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Board Recommendations

a. Recommended NRC Actions

NRC inspection effort in this area should be consistent with the core inspection program. Additional attention should be focused on monitoring the procedural compliance of the operations staff.

b. Recommended Licensee Actions

Licensee management should devote additional attention to the apparent problem of personnel not following procedural requirements. Although this area is currently being addressed by an item contained in the SEP, it does not appear that the actions are being implemented in a timely manner.

In addition to SEP items, additional management attention should be provided for the hiring and training of personnel to become licensed operators.

B. Radiological Controls

1. Analysis

The assessment of this functional area consists of activities directly related to radiological controls, including occupational radiation safety (i.e., occupational radiation

protection, radioactive materials, contamination controls, radiation field control, radiological surveys and monitoring, and as low as reasonably achievable programs); radioactive waste management (i.e., processing and onsite storage of gaseous, liquid, and solid waste); radiological effluent controls and monitoring including gaseous and liquid effluents, offsite dose calculations, radiological environmental monitoring, and confirmatory measurements; and transportation of radioactive materials (i.e., procurement of packages, preparation for shipment, periodic maintenance of packagings, and point-of-origin safeguards activities).

The occupational radiation safety program was inspected six times, including two team inspections, during this assessment period by NRC region-based radiation specialist inspectors, in addition to the routine inspections performed by the NRC resident inspectors. Violations involving the failure to follow procedures and failure to submit accurate personnel monitoring data were identified during this assessment period. An enforcement conference was held in the NRC's Region IV office on February 24, 1989, to discuss four violations identified during a January 1989 inspection. The licensee also visited the Region IV office on November 18, 1988, to provide status updates on the radiation protection enhancement program.

One of the items discussed during the enforcement conference was an event where the licensee identified that individuals entered a high radiation area without the proper dosimetry. As a result of this event and previous events of this nature, the plant manager instituted a stop-work order for all activities in radiological controlled areas (RCA). All personnel were required to attend a special training class on radiological protection practices prior to being allowed to reenter the RCA. In addition, the licensee also extensively revised the administrative controls for the generation and issuance of radiation work permits. The actions taken by management were considered to be proactive, conservative, and timely.

The licensee has initiated a radiological protection enhancement program that addresses the upgrade and improvement of all functional areas of the radiological controls area, identification of major milestones, and establishment of completion dates for each item addressed by the program. Corporate and site management have increased their level of oversight responsibilities in an effective manner with respect to the functioning of the radiological controls program. An extensive reorganization of the radiological and chemistry organizations was implemented. The two groups were previously under one supervisor, but the organizational change provided a supervisor for each group. This organizational change has increased the visibility of each group and has provided an

experienced supervisor that can concentrate his efforts on his own organization. The licensee has also increased the staffing in each group. Personnel staffing in the radiological controls area has been increased from 22 to 54 and, in the chemistry area, from 13 to 19. The experience level and technical qualifications of the occupational radiation safety staff has been significantly improved. The licensee's person-rem exposure for 1988 was about 20 percent below the PWR national average. The turnover rate with the radiation protection group was below 15 percent.

The approach to the resolution of technical issues has been demonstrated to be technically sound and thorough in almost all cases. Staff personnel have been supplemented with experienced contractor personnel to assist in the development and improvement in the areas of training, dosimetry, respiratory protection, industrial health, and radwaste management. Radiation protection technical training programs have improved over the previous assessment period. A plant systems training program has been implemented for radiation protection personnel.

The licensee's radiochemistry and water chemistry programs were inspected once during the assessment period. No violations were identified. Confirmatory measurements were performed on water chemistry samples and the results were found to be within the expected industry performance levels. The licensee's level of performance in this area appears to be satisfactory.

The licensee's transportation program was inspected once during this assessment period. No violations were identified. The licensee has maintained an adequate program during this assessment period. The licensee shipped, by rail, two large contaminated reactor coolant pump motors to an offsite vendor for overhaul and testing. The attention provided by the licensee's staff to detail and quality control surveillances involved with this shipment indicated that management involvement and control of activities were well established, controlled, and implemented.

The radiological waste management area was inspected once during this assessment period. No violations were identified. The licensee's control of liquid and gaseous effluents and the solid waste processing program is a well managed program area. The radiological environmental monitoring program was not inspected during this assessment period.

The licensee has supplemented the routine quality assurance audit functions performed by corporate personnel with appraisals performed by consultants. These appraisals have been directed at both worker performance and management involvement to improve the radiation protection program.

The licensee's performance in the radiological controls area has steadily increased in effectiveness. During the previous assessment period, concerns were identified with management oversight of the activities related to this functional area and the performance of inadequate audits. It appears that the licensee has adequately addressed these concerns. No problems were identified in these areas during this assessment period.

To improve the performance of the radiological protection and chemistry groups, the licensee commenced construction of a chemistry/radiological protection locker room and a radiological waste storage building.

The licensee is actively addressing the concerns and problems identified in this functional area through the issuance of items in the SEP.

Overall, corporate and plant management attention to the concerns identified in this functional area has been evident. It appears that the licensee is identifying their own problems and are taking actions to correct the problems. The root cause identification of problems has been adequate but results in occasional repetition of events. Licensee management is actively recruiting experienced personnel to fill the vacant positions remaining in their staffing upgrade efforts. The resolution of technical problems is generally timely and improvements are generally sound.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Board Recommendations

a. Recommended NRC Actions

The NRC inspection effort in this area should be consistent with the core inspection program.

b. Recommended Licensee Actions

The licensee should continue the on-going efforts toward improvement in the radiological controls area by completion of the implementation of the radiological protection enhancement program actions identified in the SEP, and by continuing to stress improvement in procedural compliance and self-identification of problems.

C. Maintenance/Surveillance

1. Analysis

This functional area includes all activities associated with either diagnostic, predictive, preventive, or corrective maintenance of plant structures, systems, and components; procurement, control, and storage of components, including qualification controls; installation of plant modifications; and maintenance of the plant physical condition. It includes conduct of all surveillance (diagnostic) testing activities as well as inservice testing and inspection activities.

This functional area was periodically inspected by NRC region-based inspectors and on a routine basis by the NRC resident inspectors. In addition to the routine inspection program, three special team inspections were performed. An OSTI was performed to evaluate the adequacy of support being provided to operations personnel in the areas of maintenance and surveillance. A maintenance team inspection (MTI) was performed to provide an indepth and comprehensive review of the maintenance organization and their activities. The nondestructive examination (NDE) mobile van from NRC's Region I office was on site to perform an inspection focused on the licensee's inservice inspection activities.

During this assessment period, the licensee maintained a very stable and well-qualified maintenance work force with little turnover, except for the I&C area. The turnover rate in the I&C area has been higher than any other area and has resulted in an overall decrease in the experience level (average of approximately 2 years) and effectiveness in this group. No maintenance-forced outages were experienced during this assessment period. The skill and long-term stability of the craft, with the exception of the I&C group, are considered strong points which has overcome the poor quality of procedures. The OSTI team noted a positive, professional attitude of maintenance personnel toward the performance of their responsibilities. In the area of surveillance, the licensee has assigned a dedicated individual to track the timely completion of surveillance tests.

The licensee has taken actions to increase the level of staffing for the maintenance group during this assessment period. An addition of 25 personnel has been made to the staff. The personnel were added to the crafts and maintenance planning staffs.

To improve communications between all plant and corporate organizations, the licensee issues a daily plan-of-the-day (POD). The POD has been a significant factor in the distribution of

information related to maintenance and surveillance activities. The POD provides a prioritized listing of the maintenance and surveillance activities to be performed each day. At the POD meeting held each morning, a review of the previous day's activities is performed to verify that all previously assigned activities were completed. Since the POD was initiated, problems have not occurred with the timely completion of surveillance tests.

The licensee has reduced the backlog of nonoutage, corrective maintenance orders (MO) to approximately 3500 hours. At the beginning of this assessment period, the MO backlog was approximately 4500 hours. This action represents a concentrated effort by the licensee to provide attention to components and equipment requiring maintenance. The maintenance group prioritizes the work based on the safety significance of the component or equipment.

During performance of the OSTI, problems were noted with the administrative controls of the MO process. The problems included activities related to the preparation, implementation, and review of MOs.

The MTI indicated that, while the maintenance program at the FCS was viewed as weak in areas, the SEP (when fully implemented) appeared to address all areas of concern. In particular, the MTI results indicate that, while the program is being improved, implementation, as could be expected, lags program development activities.

The MTI noted that the licensee did not have programs fully implemented to address the root cause and failure analysis process. It appeared that adequate predictive and preventive maintenance programs could not be effectively established without comprehensive root cause and failure analysis processes. These processes are currently being developed.

The performance of surveillance testing by the licensee was reviewed on a routine basis by the NRC resident inspectors and by NRC region-based inspectors. The results of an inspection performed during plant startup indicated that the licensee had implemented an adequate startup testing program staffed by experienced personnel. However, the NRC inspectors noted that the licensee did not implement an independent review for the processing of data obtained from core physics testing. It appeared that the licensee relied on the capabilities of each individual without the benefit of an independent data check. As a result, the NRC inspectors identified calculational errors in the licensee's physics testing results.

During this assessment period, problems were identified with procedural compliance. As discussed in the functional area of Plant Operations, the licensee has experienced problems with procedural compliance by all onsite organizations. It appears that this problem exists due to over familiarity of personnel with the tasks they are performing.

In the last assessment period, concerns were identified with scheduling and implementation of surveillance tests based on the issuance of TS amendments. It appeared that the licensee provided adequate corrective actions for these concerns as no problems were noted in these areas.

Overall, management involvement and control of maintenance and surveillance activities indicated evidence of prior planning and identification of priorities. Corrective actions were generally taken to address problems identified by the licensee and the NRC. Processes for root cause and failure analysis are under development and full implementation has not been achieved.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Board Recommendations

a. Recommended NRC Actions

The NRC inspection effort in this functional area should be consistent with the core inspection program. Additional inspections by NRC resident and region-based inspectors should focus on the performance of personnel conducting maintenance and surveillance field activities.

b. Recommended Licensee Actions

In addition to the SEP, licensee management should focus their attention on ensuring that personnel performing safety-related activities complete the tasks in accordance with the procedures, as written, or change procedures when required.

D. Emergency Preparedness

1. Analysis

This functional area includes activities related to the establishment and implementation of the emergency plan and implementing procedures, such as onsite and offsite plan development and coordination, support and training of onsite and

offsite emergency response organizations, licensee performance during exercises and actual events that test emergency plans, administration and implementation of the plan (both during drills and actual events), notification, radiological exposure control, recovery, protective actions, and interactions with onsite and offsite emergency response organizations during exercises and actual events.

Two emergency preparedness inspections were included in this assessment. One inspection consisted of observation of the annual emergency exercise and the other inspection reviewed the operational status of the emergency preparedness program. The second inspection to review the operational status of the emergency preparedness program was completed approximately two weeks after the end of the assessment period. Region IV management made a decision to delay this inspection based on scheduling conflicts.

Significant weaknesses were identified during the 1988 emergency preparedness exercise. During the exercise, the NRC inspection team identified several instances of failure to establish and maintain adequate information flow, inappropriate assignment of priorities, lack of adequate control and coordination, inadequate appropriation of responsibilities, failure to properly classify an emergency condition, poor reentry team briefings, poor personnel accountability methods, failure to follow procedures, and deficient radiological controls. These findings indicated that the licensee needed to make substantial improvements in their emergency response program.

A meeting was held at the Region IV office on July 28, 1988. This meeting was held to discuss the exercise weaknesses identified during the July 1988 exercise. The licensee's positive response to NRC initiatives was evident in their commitment to improve their entire emergency preparedness program. The licensee has added a permanent onsite supervisor and a clerk to their emergency planning staff. The licensee has maintained an adequate emergency planning staff to permit implementation of their program. The licensee is presently pursuing the development of a revised training program for emergency response personnel; a complete evaluation, review, and rewriting of their emergency plan implementing procedures; and an evaluation of the structure of their emergency response organization to make it consistent with procedures and training.

The licensee has promptly submitted changes to their emergency plan and implementing procedures to the NRC and has maintained a working contact with offsite support agencies. Their emergency facilities were found to be well equipped. Interviews conducted during the last inspection with emergency responders indicated that their training program was effective since emergency

response personnel demonstrated adequate overall knowledge of their duties and responsibilities. The licensee has improved their independent audit program by adding auditors from another nuclear facility that have experience in emergency preparedness. A review of their last audit, conducted in March 1989, showed that quality assurance auditors performed an independent audit with adequate scope and depth.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Board Recommendations

a. Recommended NRC Actions

The NRC inspection effort should be consistent with the core inspection program and attention should be focused, during the 1989 exercise, on followup of corrective actions for the previously identified weaknesses.

b. Recommended Licensee Actions

Licensee management should continue to provide strong support for the emergency preparedness program. The licensee should closely monitor remedial actions for weaknesses identified during the 1988 exercise to prevent recurrence.

E. Security

1. Analysis

This functional area includes all activities that ensure the security of the plant including all aspects of access control, security background checks, safeguards information protection, and fitness-for-duty activities and controls.

Inspections were conducted by region-based physical security inspectors on five occasions during this assessment period and on an ongoing basis by the NRC resident inspectors. Violations were identified that involved inadequate compensatory measures, failure to maintain isolation zones free of obstructions, failure to report security events, failure to control safeguards information, inadequate access controls, and inadequate control of keys. These types of violations have been identified during previous assessments of the security program. Management meetings were held with licensee representatives in the Region IV office on September 22, 1988, and January 19, 1989, to

discuss the security program that was developed by the licensee to address the identified security problems.

The licensee has been involved in a major upgrade of the entire security program during this assessment period. In June 1988, the licensee hired a consultant to perform an indepth review of the security program. The consultant identified significant problems related to security staffing, training, qualified first-line supervisory personnel, personnel communications, quality assurance surveillance of security programs, security program documentation, and personnel morale. Since the review was completed, the licensee has initiated a comprehensive program to correct the identified problems. The licensee has not provided strong oversight and closely monitored the scheduled completion dates of upgrade activities being accomplished by contractors.

The security upgrade program involved a major organizational restructuring of the security organization. The changes have been too recent to evaluate their impact. The selection of first-line supervisors was completed in late February 1989. These first-line supervisors are security shift supervisors that are assigned to each security shift. This individual provides the on-shift presence of a management representative and serves to provide a continuous oversight of the performance of the security force. This approach has resulted in improved performance by each security shift. Two key security management positions were filled in late March 1989.

Besides the addition of a security shift supervisor to each shift, the licensee has also added 35 personnel to the security staff. All security personnel are presently armed individuals. Having a staff of armed guards has appeared to solve some of the licensee's problems related to inadequate compensatory measures.

The licensee's focused attention to the security upgrade effort may have distracted licensee management's attention from the day-to-day operations of the security force and contributed to many of the problems and violations identified during this SALP period. Many of the violations were self-identified and the effectiveness of the licensee's corrective actions indicated positive results within the last 3 to 4 months of this assessment period. The licensee's solutions to problems have been technically sound, but completion of the upgraded programs and systems has been slow. The licensee has been generally responsive to NRC initiatives.

At the end of this assessment period, the licensee appeared to have a sufficient number of supervisors, fully-qualified security officers, and support personnel assigned to the security organization to comply with the appropriate regulatory

requirements. However, the transition to a fully-staffed security organization has not been completed. During the past 3 to 4 years, there has been a high turnover rate in the managers for the security program. These frequent management changes have resulted in the failure to establish a well organized security program. Notwithstanding the problems associated with the security program, the security force has operated at an acceptable level of performance. The training and qualifications of the security staff appear to be adequate. The licensee's attention and involvement with nuclear security was evident as demonstrated by program improvements concerning the classification, logging, and reporting of security events in the first quarter of 1989.

On April 24, 1989, the licensee implemented a fitness-for-duty program that includes random drug and alcohol testing for all licensee and contractor personnel that have unescorted access to the nuclear facility. No personnel problems with respect to the licensee's fitness-for-duty program were identified during this assessment period.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Board Recommendations

a. Recommended NRC Actions

The NRC inspection effort should include the core inspection program along with regional initiatives to inspect the security program upgrade activities.

b. Recommended Licensee Actions

Licensee management should continue to provide strong support to the implementation of the corrective actions identified in the security upgrade program. Close monitoring of the completion of the upgraded security hardware program currently in process may be required to ensure timely completion. Additional attention should be provided by management to continue to ensure effective day-to-day operation of the security force.

F. Engineering/Technical Support

1. Analysis

The assessment of this area includes all licensee activities associated with the design of plant modifications; engineering

and technical support for operations, outages, maintenance, testing, surveillance, and procurement activities; training; configuration management; and fire protection/prevention.

This functional area was inspected on an ongoing basis by the NRC resident inspectors, by NRC region-based personnel, and by the OSTI and MTI teams.

The licensee has taken actions to strengthen their design change control process during this assessment period. The changes made by the licensee were performed based on the results of a Safety System Outage and Modification Inspection (SSOMI) performed in 1985. No problems were noted with the modification instructions that were issued and the modifications installed during this assessment period. The modification packages reviewed by NRC personnel were complete, concise, and contained the appropriate elements.

During this assessment period, the plant entered a refueling outage. During reloading of fuel assemblies, one assembly became stuck. Operations personnel acted quickly to free the stuck assembly. The NRC resident inspectors observed numerous selected activities of the refueling evolutions and noted that operations personnel performed the refueling tasks in a professional manner.

The licensee inspected the tubes in both steam generators using eddy-current testing techniques during the refueling outage. The testing indicated that no tubes required plugging. This was the second refueling outage in a row where no steam generator tubes were plugged. The principal reason for not experiencing problems with steam generator tubes appears to be due to the strict secondary water chemistry program established by the licensee.

In the previous assessment period, the licensee experienced a major event where water from the fire water system was inadvertently introduced into the instrument air system. The introduction of water caused the operability of the large number of components and equipment serviced by instrument air to be questionable. As a result of the event, the licensee identified 64 corrective actions to be taken to verify that the instrument air system met the design basis, as described in the Updated Safety Analysis Report. During the refueling outage, the licensee completed all of the remaining actions related to the instrument air system upgrade.

During this assessment period, the licensee initiated a program to reconstitute the design basis for the safety-related systems installed at the FCS. As a result of the licensee's efforts, a number of design basis problems have been identified by the

engineering group. The licensee's response to the problems has been timely, conservative, and effective. Other technical issues were addressed by the engineering organization in addition to the items identified by the reconstitution program and the technical resolution of these items was timely and adequate in each case.

The licensee established an onsite systems engineering group during this assessment period. The group was established to assign specific systems to an individual that serves as the primary interface for all actions performed on the individual's assigned system. The individual is responsible for oversight of actions on each system such as maintenance, surveillance, modification, operation, and testing. The establishment of the systems engineering approach creates a systems expert for each of the systems. This approach has proven to be highly effective in the resolution of identified system problems.

The staffing of the systems engineering group was supplemented by contractors at the end of the assessment period. Approximately half of the engineers were in training that was specifically established for the engineers. The licensee increased the staffing for all engineering organizations from 123 to 213 personnel during this assessment period.

During performance of the OSTI, NRC inspectors identified problems with the method used by the engineering organization to control the installation of temporary modifications. The licensee took immediate actions to resolve the problems.

Problems with the technical content of procedures were identified by the NRC resident and region-based inspectors, and the MTI and OSTI teams. During the previous assessment period, concerns were also identified with the technical content of procedures.

The licensee has established a program for upgrading all safety-related procedures, including technical content. This program is currently in progress. The program was established to revise all safety-related procedures, approximately 3000, to provide the proper technical content, verify that the procedures can be performed as written, and perform a validation and verification by the procedure user.

A number of recurring problems in the fire protection area were identified, such as not establishing hourly fire watch patrols when required and the inoperability of fire barriers. In the early part of 1989, the licensee hired a consultant to perform the functions of a dedicated fire protection engineer and to address fire protection problems. On two occasions during this assessment period, fires occurred in the plant that required the

response of the fire brigade. In both cases, the fire brigade responded in a timely manner and quickly extinguished the fire.

A review of welding and NDE activities indicated that the licensee has taken actions to develop, issue, and implement a comprehensive welding program, and to add experienced personnel to the staff with welding expertise. Although concerns were identified with the welding program during this assessment period, the concerns appeared to be minor.

During this assessment period, the licensee's licensed operator requalification program was rated satisfactory; however, the margin of success was slight in that the failure of one additional individual of the 13 operators taking the requalification examination would have caused the program to be rated unsatisfactory. This was the first time in the last 3 years that the program had been rated as satisfactory. Problems in the area of licensed operator training continue to be identified by NRC personnel involving training material, operator input to training, and analysis of training needs. It appears that management responsible for the support of operator training continues to wait for the NRC to identify and solve problems, rather than taking a proactive approach toward identification and resolution of problems.

The replacement examination program exhibited good performance. Of the ten individuals that took replacement examinations, all ten passed and were licensed.

A review of the licensee's nonlicensed training programs was performed by an NRC region-based inspector. The review noted that it appeared that the licensee had implemented a comprehensive and effective training program. However, the OSTI team identified concerns with electrical safety training for plant personnel and those concerns are currently being addressed by the licensee.

The licensee completed the construction of a new training center in January 1989. The training center represents a substantial investment to upgrade the training facilities for the FCS. The licensee is in the process of constructing a plant-specific simulator, which should be fully operational by June 1990.

2. Performance Rating

This licensee is considered to be in Performance Category 2 in this functional area.

3. Board Recommendations

a. Recommended NRC Actions

The NRC inspection effort in this area should be consistent with the core inspection program. Additional inspections should be performed in the area of licensed operator training to verify that actions are being implemented to improve the quality of the program. In addition, the NRC should monitor the performance of the licensee during the transition period when contractor personnel are phased out. Also, further inspections should be performed in the areas of welding and NDE to assess implementation of the licensee's program.

b. Licensee Action

In addition to the SEP, the licensee should focus additional management attention in the area of the licensed operator requalification program to implement the necessary actions to maintain a satisfactory program and to improve the oversight of the program to ensure that the licensee identifies programmatic problems rather than relying on the NRC to identify the problems.

G. Safety Assessment/Quality Verification

1. Analysis

The assessment of this functional area includes all licensee review activities associated with the implementation of licensee safety policies; licensee activities related to amendment, exemption, and relief requests; response to NRC Generic Letters, Bulletins, and Information Notices; and resolution of TMI items and other regulatory initiatives. It also includes activities related to the resolution of safety issues, 10 CFR Part 21 assessments, safety committee and self-assessment activities, analyses of industry's operational experience, root cause analyses of plant events, use of feedback from plant quality assurance (QA) and quality control (QC) reviews, and participation in self-improvement programs. It includes the effectiveness of the licensee's quality verification function in identifying and correcting substandard or anomalous performance, in identifying precursors of potential problems, and in monitoring the overall performance of the plant.

This functional area was inspected on a routine basis by the NRC resident inspectors, NRC region-based inspectors during performance of the routine inspection program, and the OSTI

team. The focus of the OSTI team was to perform a review of the activities in this functional area that affected plant operations.

The licensee was responsive to the need to provide necessary support for license and amendment applications. Although the quality of the request and supporting information for the Cycle 12 reload application and approval of the internal vessel monitoring system were adequate, actions were required by NRR to obtain additional supplemental information so the NRC staff could review the submittals. However, when the licensee provided a response to NRC Generic Letter 88-17, "Loss of Decay Heat Removal," it was noted that the submittal was timely, well documented, and only minor clarifications were necessary.

The licensee upgraded their capabilities to perform safety assessments by expanding and strengthening the membership of the PRC and the Safety Audit and Review Committee (SARC), the licensee's offsite review group. The membership of the PRC was changed to include individuals such as the Manager, Nuclear Safety Review Group; Supervisor, Systems Engineering; and Manager, Quality Assurance and Quality Control. The SARC membership was changed by the addition of qualified outside consultants that have had extensive experience in the operation, management, and regulatory oversight of nuclear facilities. The changes were viewed as a positive step toward increasing the safety oversight capability of these two groups.

To provide an additional independent safety review of plant problems, the licensee has established and staffed the Nuclear Safety Review Group (NSRG). The function of this group is to independently review plant events and other items as directed by the Manager, NSRG. Based on the results of reviews, the NSRG identifies root causes, makes recommendations for correction of the problems, and verifies that the corrections are appropriately implemented. The NSRG has performed reviews of plant problems and issued a report on their findings. However, all permanent members of the NSRG have not yet been selected and trained. Due to the incomplete permanent staffing of the group, a complete evaluation of the group's effectiveness could not be performed during this assessment period.

In addition to formation of the NSRG, the licensee also strengthened their capability for safety assessment and quality verification by increasing the staff for the QA and QC organizations from 19 to 27 personnel. A staffing increase of seven personnel was also made in the nuclear licensing and industry affairs group.

During this assessment period, reviews were performed of the activities of the onsite QA organization. The reviews revealed

that the audits and surveillances performed by the QA group were compliance-oriented rather than based on an operational-safety approach. Also noted during reviews of the QA program, was a problem with the licensee's definition of significant deficiencies. The threshold for identifying a deficiency as significant was established at such a high level by the licensee that deficiencies were rarely classed as significant. For this reason, the additional management review required for significant deficiencies was not being performed.

LERs adequately described the major aspects of each event, including component or system failures that contributed to the event and the significant corrective actions taken or planned to prevent recurrence. Although the reports are generally well written and easy to understand, the quality of the reports could be improved. During review of LERs, it appeared that the same types of events are recurring which implies that inadequate corrective actions are being taken in response to plant events.

During the previous assessment period, problems were noted in the areas of commitment tracking and the implementation of corrective actions to be taken in response to a plant event. It appears that the licensee took adequate corrective actions to address these issues since no problems were noted during this assessment period.

Overall, it appears that the involvement and oversight by management of the activities related to this functional area were evident with indications of prior planning and assignment of priorities. However, there were a large number of LERs and violations in this functional area as compared with the other areas. Corrective actions were usually taken but weak root cause determinations occasionally resulted in repetition of events. The licensee's resolution of technical issues indicated that issues were clearly understood, conservative, timely completed, and technically sound. With respect to responsiveness to NRC initiatives, the licensee's actions were timely, generally sound and thorough, and acceptable resolutions were generally provided. The licensee's efforts to increase the staffing in the organizations responsible for the performance of activities in this area is notable. It is apparent that experienced and knowledgeable personnel have been added to the licensee's staff.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Recommendations

a. NRC Actions

The level of NRC inspection effort in this functional area should be consistent with the core inspection program. In addition, NRC inspections should be conducted on the licensee's audit program.

b. Licensee Actions

The licensee should provide additional management attention to the completeness and technical content of submissions made to NRR in response to NRC-identified initiatives and TS amendment requests initiated by the licensee. Additional management attention is required to ensure that appropriate corrective actions are taken as a result of plant events. Licensee management should provide timely training and staffing of the NSRG to provide an independent review group to address the root causes of plant problems.

V. Supporting Data and Summaries

A. Enforcement Activity

The SALP Board reviewed the enforcement history for the period of May 1, 1988, through April 30, 1989. The review included the deviations, violations, and emergency preparedness weaknesses provided in Table 1. Escalated enforcement conferences, and the results, held during this assessment period are listed below:

- ° On June 8, 1988, an enforcement conference was held to discuss the issues related to installation of inadequate check valves for the air accumulators for the SIRWT level controllers. Also discussed at this meeting, was the loss of containment integrity due to a cap missing on an instrument test tee. As a result of this meeting, two Severity Level III violations were issued with an aggregate Civil Penalty of \$50,000.
- ° On August 11, 1988, an enforcement conference was held to discuss the issues related to the licensee's submittal of nonconservative thermal margin/low pressure (TM/LP) setpoints for the Cycle 11 operating cycle. As a result of the conference, one Severity Level III and one Severity Level IV violation were issued. No civil penalty was imposed.
- ° On February 24, 1989, an enforcement conference was held to discuss the concerns related to radiological control practices. As a result of the enforcement conference three violations were issued: two Severity Level IV and one Severity Level V.

- ° On April 12, 1989, an enforcement conference was held to discuss problems identified in the area of security. The results of the conference had not been published by the end of this assessment period.

B. Confirmatory Action Letters

On July 11, 1988, a confirmatory action letter was issued to document the actions to be taken by the licensee to address the nonconservative TM/LP setpoints generated for the Cycle 11 operating cycle.

C. 10 CFR Part 21 Reports Submitted by Licensee

No Part 21 reports were submitted by the licensee during this assessment period.

TABLE 1
ENFORCEMENT ACTIVITY

FUNCTIONAL AREA	WEAKNESSES(1)	DEV	NO. OF VIOLATIONS IN SEVERITY LEVEL			ENFORCEMENT ACTION NOT ISSUED
			V	IV	III	
A. Plant Operations				4 ⁽²⁾		
B. Radiological Controls			1	4		
C. Maintenance/Surveillance			1	6 ⁽²⁾	1	2
D. Emergency Preparedness	15					
E. Security				7		6
F. Engineering/Technical Support		2	2	19	2	
G. Safety Assessment/Quality Verification				11		
TOTAL	15	2	4	51	3	8

(1) Applicable only to the emergency preparedness program.

(2) Includes Violation 285/8913-01 which has an example in both Plant Operations and Maintenance/Surveillance