INITIAL SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBER

50-498/92-99

50-499/92-99

Houston Lighting & Power Company

South Texas Project

Electric Generating Station, Units 1 and 2

June 2, 1991, through August 1, 1992

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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 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 September 16, 1992, 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."

This report is the NRC's assessment of the licensee's safety performance at South Texas Project for the period June 2, 1991, through August 1, 1992.

The SALP Board for South Texas Project was composed of:

Chairman

A. Bill Beach, Director, Division of Reactor Projects (DRP), Region IV

Members

S. J. Collins, Director, Division of Reactor Safety (DRS), Region IV
L. J. Callan, Director, Division of Radiation Safety and Safeguards (DRSS), Region IV
S. C. Black, Director, Project Directorate IV-2 (PDIV-2), Office of Nuclear Reactor Regulation (NRR)
A. T. Howell, Chief, Project Section D, DRP, Region IV
G. F. Dick, Project Manager, PDIV-2, NRR
J. I. Tapia, Senior Resident Inspector, Project Section D, DRP, Region IV

The following personnel also participated in or observed the SALP Board meeting:

B. Murray, Chief, Facility Inspection Programs Section, DRSS, Region IV
T. F. Westerman, Chief, Plant Systems Section, DRS, Region IV
T. F. Stetka, Chief, Operational Programs Section, DRS, Region IV
J. L. Pellet, Chief, Operator Licensing Section, DRS, Region IV
M. A. Satorius, Project Engineer, Project Section D, DRP Region IV
R. J. Evans, Resident Inspector, Project Section D, DRP, Region IV
P. M. Ray, Operations Engineer, Performance and Quality Evaluation Branch (LPEB), NRR
V. L. Ordaz, Reactor Engineer Intern, LPEB, NRR
G. L. Guerra, Radiation Specialist Intern, DRP, Region IV

II. SUMMARY OF RESULTS

Overview

Overall, licensee performance was good; however, a decline in performance was noted in some areas. Performance in the Plant Operations functional area was considered good. Although the number of operator errors and equipment failures that resulted in reactor trips was reduced, the operators continue to be challenged by plant transients resulting from long-standing equipment problems and human errors. In one instance, licensed operators were unable to perform their licensed duties because of inappropriate actions by management. A declining trend was identified in the Maintenance/Surveillance functional area. As noted in the previous assessment period, programs in these areas remained strong; however, numerous implementation weaknesses resulted in unnecessary reactor trips and engineered safety features (ESF) actuations and reduced availability of safety-related and balance-of-plant equipment. The material condition and housekeeping of the plant was also in need of further improvement. The need for greater management involvement in and support of routine operations and maintenance activities was evident.

Performance in the Radiological Controls functional area remained superior. Good performance in the Emergency Preparedness area was noted; however, a lack of maintenance of Technical Support Center (TSC) support systems had the potential to reduce the level of protection for emergency workers. Performance in the area of Security was considered good, having declined from a previous superior level. The lack of maintenance support for security systems and equipment and reduced management attention contributed to the declining performance.

Performance in Engineering/Technical Support was good, but the improving trend identified during the previous assessment period was not sustained. A number of positive initiatives were indicative of effective management involvement. Self-assessment and quality verification activities in this area were a noteworthy strength, and improvements were noted in the licensed operator requalification program. However, the bases for sizing calculations of some safety-related motor-operated valves was questioned by NRC and remained unresolved at the end of the assessment period.

Performance in the area of Safety Assessment/Quality Verification was considered good, having declined from a previous superior level. Corrective action processes and implementation were generally good, but the results of various licensee improvement initiatives were mixed.

During this assessment period, it was evident that licensee management had not placed sufficient emphasis on maintaining plant equipment that is not governed by the Technical Specifications (TS). This common performance trend, that was first identified late in the previous assessment period, had a detrimental effect on performance in several functional areas. As a result, performance was affected in the areas of Plant Operations, Maintenance/Surveillance, Emergency Preparedness, and Security. Additional contributors to the

reduction in the level of material condition was the poor level of housekeeping in areas outside of the radiological controlled areas, and the inability to resolve several long-standing equipment problems. The need for a significantly higher level of management attention to improve the overall material condition of the station was evident.

The licensee's performance category rating for each functional area assessed is provided in the table below, along with the ratings from the previous SALP assessment period:

Functional Area	Rating Last Period 02/01/90 to 06/01/91	Rating This Period 06/02/91 to 08/01/92	Trend
Plant Operations	2	2	
Radiological Controls	1	1	
Maintenance/Surveillance	2	2	**D
Emergency Preparedness	2	2	
Security	1	2	
Engineering/Technical Support	*2I	2	
Safety Assessment/ Quality Verification	**1D	2	

*I: Improving Trend - Licensee performance was determined to be improving during this assessment period. Continuation of the trend may result in a change in the performance rating.

**D: Declining Trend - Licensee performance was determined to be declining during this assessment period and the licensee had not taken meaningful steps to address this pattern. Continuation of the trend may result in a change in the performance rating.

III. CRITERIA

The evaluation criteria, category definitions, and SALP process methodology that were used, as applicable, to assess each functional area are described in detail in NRC Manual Chapter 0516, dated September 28, 1990. This chapter is available in the Public Document Room files. Therefore, these criteria are not repeated in this report but will be presented in detail at the public meeting to be held with licensee management on October 13, 1992, at 1 p.m.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

This functional area consists primarily of the control and execution of activities directly related to operating the plant.

NRC inspection efforts consisted of the core inspection program by the resident inspectors and regional initiative inspections of plant procedures and of Unit 2 refueling activities. Two special inspections were performed that involved a Unit 2 reactor trip and safety injection actuation signal following a reactor coolant spray valve failure and the entry into TS 3.0.3 following the discovery of a surveillance requirement that had never been implemented for Units 1 and 2.

The previous SALP report (NRC Inspection Report 50-498/91-99; 50-499/91-99) noted strong performance by operators during plant transients, good operations support, and that the plant operating procedures, housekeeping, and material condition of the plant had improved. The previous SALP report recommended that the licensee continue to: improve the secondary side material condition of the facility, procedure adequacy and compliance, plant labelling, human performance and station reliability; and reduce the number of plant challenges.

During this assessment period, enforcement history and reportable events in this area revealed the continuation of the similar types of problems that were noted during the previous assessment period, but fewer in number. These included instances of TS noncompliance; and reactor trips and plant shutdowns caused by equipment problems and human errors. The lack of reliability of the anticipated transient without scram mitigation system actuation circuitry (AMSAC) was identified as an apparent violation at the end of the previous assessment period, and a Notice of Violation and Civil Penalty were subsequently issued.

Management involvement in plant operations was generally good during this assessment period, with some exceptions noted. The Unit 2 refueling outage and the Unit 1 maintenance outage were both well managed and controlled. A reactor trip reduction policy, as well as a reactivity management concept were implemented. Additionally, management support of plant operating procedure and labelling program upgrades was a strength. However, weaknesses were identified by NRC in ensuring that the proper plant conditions were established prior to repairing a steam generator inspection cover leak, maintaining the control room logbook, and implementing clearance orders. In one instance, licensee management, in May 1992, failed to inform licensed operators in a timely manner of a condition that required action to shut down both units.

Throughout the assessment period, the licensee continued to experience plant challenges from equipment problems. One reactor trip occurred because of a failed diode in the rod control circuitry, a second trip occurred when a reactor coolant system pressurizer spray valve failed open following maintenance, and a manual reactor trip was initiated by operators because of a loss of steam generator feedwater flow. A forced unit shutdown occurred when a valve packing leak exceeded the TS leakage limits. Plant power reductions, both voluntary and forced, were performed on several occasions to allow for repairs of secondary side equipment.

During the previous assessment period, a decline in operator performance was noted based on the number of personnel errors which resulted in challenges to plant equipment and TS violations during routine operations. Although the overall number of events decreased since the last assessment period, events caused by human error still occurred. A reactor trip occurred because of operator inattention during the performance of a surveillance test. An operator, performing a plant shutdown, allowed the reactor coolant system temperature to drop below the minimum temperature for criticality. This event was also attributed to an excessive cooldown rate caused by secondary side steam leakage and secondary side design problems. In addition, a licensed operator was not sufficiently attentive during a boration evolution that he initiated and, as a result, an excess boration event occurred.

As in the previous assessment period, operating crew performance remained good in response to most plant events and transients, and licensed operator actions were consistently conservative in nature. For example, the operators were required to respond to a number of long-standing steam generator feedwater system problems that either caused a plant transient or required a power reduction to effect repair.

Plant operating procedures, including the emergency operating procedures, system operating procedures, and alarm response procedures, were upgraded during the assessment period. The procedures were upgraded as part of a long-term procedure enhancement program. Overall, the plant operating procedures were evaluated to be good even though isolated incidents have been identified that suggest the operating procedure upgrades are incomplete. For example, all four auxiliary feedwater flow control valves were found out of position following a reactor trip because of a less than adequate reactor trip response procedure. Generally, adherence to procedures by operators has been good.

During this assessment period, several licensee senior and middle management changes were made. The position of vice president, nuclear support, was eliminated and the position of deputy plant manager was established. A new plant manager was assigned. The overall effectiveness of the changes have not been fully assessed because they occurred toward the end of the assessment period.

Operating crew staffing to support routine operations was evaluated as good. Operations support staffing and assistance was determined to be superior. The support staff has continuously provided good technical support in such areas as dispositioning station problem reports and upgrading procedures. Other staffing issues, however, continue to challenge licensee management, such as nonlicensed operator overtime rates during extended outages.

Operations personnel maintained a professional work environment in the control room. Communications between the control room operators and craft personnel during the performance of maintenance and surveillance activities were good. The ability to control and direct complex evolutions was evident during reduced inventory operations and power changes.

In summary, performance in this functional area was good. Plant transients resulting from equipment failures and human errors continued; however, operators continued to perform well during these events.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort in this area should be consistent with the core inspection program, with regional initiatives in the areas of plant operating procedures and operations administrative control systems.

b. Licensee Actions

The licensee should continue efforts to provide enhanced guidance and support to the operators in order to operate the station as intended, and reduce the number of unnecessary challenges to plant safety systems.

B. Radiological Controls

1. Analysis

This functional area consists primarily of activities related to radiation protection, radioactive waste management, radiological effluent control and monitoring, radiochemistry confirmatory measurements, radiological environmental monitoring, and transportation of radioactive materials.

This area was inspected by both the resident inspectors and Region-based inspectors. The previous SALP report identified no major weaknesses in this area. No violations or deviations were identified during the current assessment period.

Management support for all areas of the radiological controls program continued to be excellent. Supervisory radiation protection personnel were afforded opportunities to attend offsite training and professional meetings in order to maintain their level of technical expertise and knowledge of industry practices. Also, corporate oversight and support for the radiation protection program were increased through the staffing of a radiological assessor position in the corporate staff to assess the effectiveness of the various elements of the program.

Audits performed during this assessment period were comprehensive and identified areas where program improvements were possible. Audit teams

included technical experts and members with radiological controls experience. Responses to audit findings were timely, and the corrective actions were technically sound.

The program of reporting radiological occurrences and radiological controls deficiencies functioned effectively to identify, correct, and trend such occurrences. Quarterly summaries were prepared for the plant manager's review.

Radiological controls procedures had been revised. The revisions provided improved guidance, and the organization of the new procedures was also enhanced.

The implementation of the as low as reasonably achievable (ALARA) program was effective. The ALARA committee was composed of members of both management and craft personnel. Management support was demonstrated by the effective staffing for ALARA. The licensee had an active ALARA suggestion program, indicating excellent worker participation. Superior ALARA performance resulted in low person-rem exposures, even though the goals established by the licensee were challenging. The ALARA group initiated a program to identify hot spots within support systems and continued the source term reduction program initiated during the previous assessment period.

Radiation protection was sufficiently staffed and contract radiation protection technicians were not used during routine operations. The annual turnover rate of technicians was less than 10 percent except for the chemical support group. Contract radiation protection technicians were provided to assist the licensee's staff during the Unit 2 refueling outage.

Qualified and experienced instructors provided excellent instruction for all areas of radiological controls. The licensee promoted the professional development of radiation protection technicians by providing training and sponsoring testing for registration by the National Registry of Radiation Protection Technologists. Several members of the radiation protection program were certified by or were seeking certification by the Health Physics Society. Many were continuing their education and seeking initial or advanced degrees.

The implementation of the radiological protection program was excellent. An effective radiation work permit program was maintained. Comprehensive instructions were provided to the workers, and worker adherence to radiation work permit instructions and operating procedures was good. Oversight of work activities in the radiological controlled area was excellent. The number of personnel contamination events was low. The total contaminated area in both units was low. The level of housekeeping in the radiological controlled area, especially toward the end of the assessment period, was superior.

External radiation exposure controls were implemented effectively. The dosimetry and associated quality assurance programs were state-of-the-art. An electronic dosimetry system supplemented the thermoluminescent dosimeters worn

by radiation workers and were used instead of the pocket ion chambers. Video monitoring was used to plan work activities in high radiation areas on a case-by-case basis.

An excellent liquid and gaseous radioactive waste effluent program was implemented. All aspects of the program were performed in accordance with Radiological Effluent Technical Specifications and the Offsite Dose Calculation Manual. Procedures provided good guidance. No unplanned releases occurred during the assessment period.

NRC confirmatory measurement reviews noted that an effective radiochemistry measurements program was in use. The radiochemistry and health physics radiological counting facilities were well maintained.

The transportation program was well implemented. Procedural guidance was good, and shipments were properly documented. Detailed procedures for classification and characterization of radioactive waste were implemented through the use of a computer program.

In summary, the radiological controls program maintained a superior level of performance during this assessment period.

2. Performance Rating

The licensee is considered to be in Performance Category 1 in this functional area.

3. Recommendations

None

C. Maintenance/Surveillance

1. Analysis

This functional area consists of activities associated with the preventive and corrective maintenance of plant structures, systems, and components. This area also includes the conduct of surveillance testing, integrated leak rate testing, welding activities, and inservice testing and inspection activities.

This area was routinely inspected by the resident inspectors and periodically by Region-based inspectors. Regional initiative inspections were performed in the areas of maintenance program implementation, surveillance testing and calibration control, boric acid corrosion, containment integrated leak rate testing and results, and inservice inspection of selected Unit 2 activities. One special followup team inspection was performed that addressed the training of maintenance employees, maintenance work controls, and the maintenance service request backlog.

The previous SALP report indicated that the licensee had: strong containment integrated and local leak rate testing programs; a high quality surveillance program and procedures; a well written and implemented post refueling startup testing program; a comprehensive measuring and test equipment quality assurance program; and effective training programs. The licensee also had effectively implemented a number of assessment initiatives. Weaknesses were identified in a number of areas involving personnel errors during the performance of maintenance, procedural compliance, employee overtime rates, long-standing equipment problems, and potential falsification of records. NRC recommended that the licensee maintain the good level of program development and improve implementation, devote additional attention to assure adherence to procedures, and improve the material condition of the plant.

During this assessment period, the enforcement history was indicative of acceptable performance. A Notice of Violation and Civil Penalty were issued during this assessment period because of maintenance record falsification by contractor personnel that occurred during the previous assessment period. A number of nonescalated violations were cited that involved the failure to follow a surveillance procedure which resulted in a reactor trip, inadequate pressurizer spray valve configuration control, which also resulted in a reactor trip, a failure to follow an integrated leak rate test procedure, which resulted in the loss of lubrication to a reactor coolant pump bearing, and inadequate postmaintenance testing of an emergency diesel generator (EDG).

The licensee's preventive and corrective maintenance programs were considered good. Several strengths were identified. The licensee had a good maintenance work control process that provided for the identification of equipment problems, evaluation of equipment operability, work activity prioritization, conduct of maintenance activities, and proper closure of work packages. The specific training given to maintenance personnel on work processes was good, and the workers were suitably tested to demonstrate their knowledge. Minor maintenance program weaknesses were identified that involved an absence of a requirement to document as-found conditions and subsequent corrective actions in the completed work package for use in the equipment history files and a failure of the preventive maintenance program to identify generic issues. The licensee's trending program also appeared to be ineffective in identifying components that had a high risk of failure. A potentially significant weakness was identified involving a lack of policy for the signing and dating of work performance on permanent plant records. This weakness resulted in confusion on the part of some workers and supervisors as to what their responsibilities were for documenting work performance. The licensee subsequently issued procedures that clearly defined expectations in this area.

Overall, the performance of maintenance was adequate. Several implementation problems were identified. Inadequate work instructions, instances of failure to follow procedures, and weaknesses associated with craft workmanship resulted in number of problems during the assessment period. Human error resulted in one reactor trip when an electrician landed wires incorrectly. The use of a vendor manual instead of detailed work instructions caused a pressurizer spray valve to fail open which resulted in a reactor trip and

safety injection actuation signal. Several poor work practices that had the potential for reactor trips were identified, including the performance of troubleshooting activities without informing the control room operators. A steam leak developed in a valve as a result of not incorporating a vendor recommendation into the maintenance work instructions pertaining to valve repacking, which delayed the restart of a unit following a reactor trip. Overtorquing of electrical breaker arc chutes occurred because out-of-date vendor torquing requirements were being used. Collectively, these problems were indicative of a need for improvement in the implementation of system and equipment maintenance and in the use of vendor supplied information.

Some of the licensee's internal procedures for work on nonsafety-related equipment were not being satisfied by maintenance workers. In particular, there were instances in which the configuration control change log was not used for lifting leads. There were also instances of technicians implementing work requests without signing the work orders.

The use of maintenance verification points and independent verification points was inconsistent. While these requirements were contained in specified procedures, it was evident that they were not being applied in a consistent manner by personnel because of a lack of understanding of these requirements or inattention to detail.

Several weaknesses in planning and scheduling of maintenance were identified. These weaknesses resulted in unnecessary safety-related equipment outages and unnecessary challenges to safety-related equipment. For example, there were two instances in which the same ESF components were actuated for different surveillances within days of each surveillance test. In another instance, a steam generator power operated relief valve was taken out of service even though the intended work could not be performed.

Early in the assessment period, licensee management focused their efforts to reduce the number of open maintenance work requests in the areas of control room instruments, chemical process monitors, and control functions. This approach involved dedicated work teams and resulted in a significant decrease in the number of deficiencies in these areas. An inspection of the maintenance backlog (open service requests) was performed late in the assessment period. The inspectors found that open service requests were being properly prioritized; however, the size of the maintenance backlog has steadily increased during the second half of the assessment period.

The material condition of the plant requires continued management focus. The number of secondary side steam leaks has been reduced but still remains relatively high. Effective action has been taken to resolve some long-standing equipment problems such as the steam generator power operated relief valves and main feedwater isolation valves. Long-standing equipment problems relative to the EDGs and the steam generator feedwater system continue to impact plant operations. For example, there have been several trips of the EDGs when being placed in the cooldown mode or released from the emergency mode of operation. Other safety-related components, such as the source range

monitors and essential chillers developed problems that were not resolved in a timely manner. The licensee has committed a considerable amount of time and effort to resolve these long-standing problems; however, these efforts only have been partially successful.

Increased management attention in the area of housekeeping is also warranted. While the level of housekeeping in the radiological controlled areas was superior, it was often poor in other areas of the facility.

Overtime rates for some maintenance work groups continued to be excessive during extended outages and exceeded the licensee's goals.

The licensee recently completed improvements in the remodelling of the maintenance operations facility and moved all the maintenance staff, maintenance support staff, work control center, and maintenance management into one location.

The surveillance and testing programs were effective. Surveillance tests were being scheduled and performed as required by TS. The missed surveillance rate was extremely low. Overall, surveillance procedures were determined to be of high quality. The requirements for calibration of safety-related instrumentation not specifically controlled by the TS were included in the licensee's preventive maintenance program. The licensee assigned the responsibility for surveillances to a plant surveillance coordinator with supporting responsibilities given to individual department coordinators. This appeared to improve the effectiveness of the surveillance program.

The implementation of surveillances and tests was good, with some weaknesses noted. The performance of one deficient procedure resulted in the unintentional start of a component cooling water pump. A deficient manual reactor trip surveillance procedure was identified during the periodic procedure review process. This resulted in temporary power reductions in both units because of a resultant TS 3.0.3 entry. Events associated with human error continued to occur during the performance of surveillance tests. Licensed operator inattention to detail during the performance of a surveillance test resulted in a reactor trip. Another reactor trip occurred because an instrumentation and controls technician failed to follow a procedure. In another instance, an auxiliary feedwater pump was inadvertently started and a containment ventilation isolation occurred during the performance of surveillance tests.

An evaluation of containment integrated leak rate test results was performed and the results indicated that all requirements were satisfied. In-service inspection (ISI) activities, which included the nondestructive examinations specified in the ISI examination plan, were being effectively performed. The nondestructive examination personnel performing the examinations were properly certified as being qualified for the particular method in use. The control and documentation of ISI examinations were well established and implemented.

Late in the assessment period, the licensee implemented major changes in the work process program to improve station performance and to streamline the administrative workload associated with work scheduling and design changes. In addition, the licensee planned to initiate a number of maintenance self-assessments. The effectiveness of the changes and the results of these self-assessments could not be assessed by NRC by the end of the assessment period.

In summary, performance in this functional area was good. While the programs remained strong, weaknesses were noted in the implementation of maintenance. This is indicative of the need for increased management attention to, and support of maintenance. Further improvement in the areas of material condition and housekeeping is warranted.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area, with a declining trend noted.

3. Recommendations

a. NRC Actions

Inspection effort in this area should be consistent with the core inspection program, with regional initiatives to assess the overall effectiveness of the maintenance enhancements that the licensee has implemented to improve maintenance activities.

b. Licensee Actions

The licensee should assess the effectiveness of various maintenance initiatives and make appropriate changes on the basis of the results of these assessments. The licensee should also take those actions necessary to improve the overall level of material condition and housekeeping of the facility.

D. Emergency Preparedness

1. Analysis

This functional area includes activities related to the establishment and implementation of the emergency plan and implementing procedures, onsite and offsite plan development and coordination, support and training of emergency response organizations, licensee performance during exercise and actual events that test the emergency plans, and interactions with onsite and offsite emergency response organizations during planned exercises and actual events.

Evaluation of this functional area was based on the results of four inspections conducted by Region-based inspectors and observations made by the resident inspectors. The four regional inspections included the evaluation of both of the annual emergency exercises conducted during this SALP period.

The previous SALP report noted that the licensee took vigorous initiatives to perform a comprehensive review of their emergency preparedness program and implemented extensive and effective corrective actions. The SALP report further recommended that the licensee ensure that improvements and changes to the emergency preparedness program are fully implemented.

There were three events which resulted in the licensee making a Notification of Unusual Event. All of these events were the result of entering a TS which required a plant shutdown. In one instance, the licensee was not prompt in following the emergency plan and implementing procedures because licensee management did not inform the control room operators in a timely manner.

There was evidence of licensee management involvement in assuring a good emergency response and the effectiveness of related training. This was evident from the two emergency preparedness exercises. The exercise scenarios were challenging and provided a good test for exercise objectives. Realism was enhanced by the use of the plant specific simulator. The demonstrated emergency decision-making process during the exercises was strong. The licensee also conducted effective interactions with both state and local response organizations during the exercises.

Five weaknesses were identified during the August 1991 exercise. The technical issues involved the failure of the control room staff to detect and classify promptly the Alert condition, instances of poor operational assessment and technical evaluation in the TSC, poor radiological practices by the medical team, and failure to include radiological precautions in public announcements made during the site evacuation of site personnel. These problems were corrected prior to the April 1992 exercise; however, four additional weaknesses were identified during the April 1992 exercise. The technical issues involved inadequacies in the notification process used to notify offsite authorities; a deficient procedure that required decision makers to obtain concurrence from state authorities prior to issuing protective action recommendations, thereby creating the potential of delaying protective action; poor medical treatment practices; and weaknesses in the plant evacuation process. One additional weakness was identified during the operational status inspection walkthroughs conducted with control room staffs. This weakness pertained to several discrepancies in classification of emergencies, notifications, and protective action recommendations.

The licensee's emergency plan was maintained in a good state of operational readiness during this assessment period. The licensee had promptly and correctly implemented changes to the emergency plan and implementing procedures. However, some deficient changes to procedures were identified. The licensee's emergency response facilities were well equipped; however, several problems were noted with the TSC support systems. Inadequate preventive maintenance of both TSC chillers resulted in an event that caused erroneous computer parameters and a temporary power reduction. On several occasions, the TSC diesel generator would not start on demand. Collectively, these problems had the potential to reduce the level of protection for emergency workers.

The licensee's audits of this area were considered good. The training program for emergency response personnel had produced good results as demonstrated by walkthroughs with operating crews. These walkthroughs measured the retention of emergency preparedness information by operators. The licensee's emergency response organization is presently staffed by well trained and qualified individuals and could be promptly activated to respond to emergencies.

In general, the licensee responded well by taking appropriate corrective measures for issues identified internally as well as for those problems identified by NRC. This was indicative of good management involvement and support.

One area in which corrective measures were less than fully effective pertained to the licensee's callout methods. The licensee had changed between manual and automatic callout methods several times, and it was not clear from the licensee's records that either method of augmentation was effective in supplementing the staff within the required time. The quality and scope of the corrective measures implemented by the licensee, as shown by exercise weakness and the lack of prompt validation of callout methods, indicated that corrective measures for technical issues were not always timely. At the time of this assessment, corrective measures still have not been effectively implemented for the licensee's callout methods.

The licensee maintained an excellent working relationship with state and local offsite response agencies. The licensee kept those agencies informed of the status of emergency planning and of changes in the emergency plan.

In summary, the licensee's implementation of the emergency preparedness program demonstrated their readiness to protect the health and safety of the public. A pattern of performance and self-corrective measures sufficient to maintain good operational readiness for responding to emergencies was demonstrated during exercises and most events. The licensee's corrective measures for weaknesses identified during the inspections were generally satisfactory.

2. Performance Rating

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

3. Recommendations

None

E. Security

1. Analysis

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

Evaluation of this functional area was based on the results of two routine Region-based inspections, two team inspections, and observations by the resident inspectors.

The previous SALP report noted strong management support for the security program and superior programs in the areas of staffing, training, and enforcement history. The previous SALP report did not include any specific recommendations.

During this assessment period, a declining trend was noted in the security area. Violations identified late in the previous assessment period involving search inadequacies resulted in escalated enforcement during this period. Several other violations were identified during this assessment period involving personnel escort controls, search procedures, the protection of safeguards information, testing of intrusion detection systems, and the failure of a security system to function properly. Timely and long-term corrective actions in response to the violations were not always effective to correct the root cause of the problem. A meeting was held with the licensee in the Region IV office on February 21, 1992, to discuss several security program issues, some pertaining to several of the enforcement issues discussed above.

Comprehensive, performance based, quality assurance (QA) audits had been performed which identified various program deficiencies and improvement items. However, the responses to the most recent audit findings had not been completed to permit a proper evaluation of the effectiveness of the identified corrective actions.

Management involvement and attention to the security program appeared to have diminished during this assessment period. Management was not consistently effective in assuring that security problems requiring maintenance support received timely and long-term corrective actions. Security maintenance service requests usually received a low priority designation resulting in slow response from the maintenance department. The slow response for maintenance support had resulted in the deterioration of several security systems and heavy reliance on compensatory posting of security officers. The lack of spare parts also caused unnecessary delays in routine repairs of security systems.

A noticeable decline was identified regarding security systems performance early in the assessment period when the two security staff positions designated for testing security systems were eliminated. These two positions were later reinstated during the assessment period and a marked improvement was noted with the operability of the security systems.

Several significant staffing changes occurred within the licensee's and their contractor's security organizations during the assessment period. The licensee's security manager was replaced in January 1992. The contractor security project manager was also replaced. Four licensee security supervisor positions were eliminated. Security staffing was maintained at an appropriate

level, but a large personnel turnover rate (about 16 percent) occurred in the contract security force during the assessment period. Twenty-nine new security officers were hired near the end of the assessment period and were attending initial security training. Security supervisors were tasked with handling considerable routine administrative work which frequently interfered with them being in the field performing normal supervisory duties. Because these staffing changes occurred during the second half of the assessment period, the impact of these changes on the overall effectiveness of the security program has not been fully evaluated by NRC. Other staffing issues pertained to disciplinary action taken against contractor security officers. For example, two security officers were denied site access for falsifying patrol logs.

Security training continues to be a program strength. The program includes an excellent staff along with well qualified instructors. The program has strong supervision and excellent facilities, and training requirements were completed on schedule.

The licensee submitted three physical security plan change packages pursuant to 10 CFR 50.54(p) that involved several changes to their physical security plan. Most of the changes were made pursuant to 10 CFR 50.54(p); however, each package contained some changes that decreased the plan commitments and should have been submitted pursuant to 10 CFR 50.90. The inclusion of changes not allowed under 10 CFR 50.54(p) indicated a lack of thoroughness in the licensee's review process.

In summary, a general decline was observed in the performance level of the security program. The lack of maintenance support for the security program and reduced management attention contributed to the declining performance. Significant staffing changes occurred. The training program continues to be a strength. Comprehensive, performance based audits were performed, but the effectiveness of the corrective actions could not be evaluated by the end of the assessment period.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort in this area should be consistent with the core inspection program, with regional initiatives in the areas of management effectiveness, staffing, and security system maintenance.

b. Licensee Actions

The licensee should improve maintenance support of security systems. The licensee should provide more thorough reviews of security plan changes.

F. Engineering/Technical Support

1. Analysis

This functional area consists of technical and engineering support for all plant activities. It 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; vendor interface activities; and configuration management.

This functional area was inspected on an ongoing basis by the resident inspectors and periodically by the Region-based inspectors. The inspection effort also included team inspections to assess the design of the electrical distribution system, to assess the program and procedures developed in response to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," and to evaluate the engineering and technical support activities and the self-assessments of those activities.

The previous SALP report noted strong management involvement in enhancing programs; better utilization of engineering resources as a result of reorganization; effective configuration controls; and good staffing. The previous SALP noted weaknesses in the quality of examination material for the requalification program; the engineering support for troubleshooting, which contributed to plant transients and repetitive problems; the timeliness of resolution for some technical issues; and communication with other departments which caused maintenance delays. The SALP report recommended that the licensee continue to emphasize effective engineering support activities, particularly with regard to the quality, depth, and timeliness of evaluations performed in support of operational and maintenance activities.

During this assessment period, enforcement history in this area revealed no significant areas of concern. However, an unresolved item pertaining to the sizing calculations for some safety-related motor-operated valves (MOVs) remained open pending further inspection followup.

During this assessment period, an electrical distribution system functional inspection (EDSFI) was conducted by a team of NRC and consultant personnel. In addition to evaluating the adequacy of pertinent design features, the inspection included an evaluation of the capabilities and performance of the engineering and technical support organizations. The team determined that there was effective engineering support provided for the electrical distribution and supporting systems. The team noted that the licensee had implemented a critical self-assessment of various aspects of the facility that related to the electrical distribution and support systems. The licensee

gained insights into the systems during the implementation of the self-assessment, which allowed prompt and thorough presentation of documentation during the EDSFI.

The QA organization provided significant oversight of engineering activities. The QA organization performed audits, surveillances, assessments, in-process reviews, and safety system functional assessments. In addition, within the Design Engineering Department, there is a quality engineering group that performs assessments.

The EDSFI determined that the licensee implemented prompt corrective actions for most of the problems identified during the self-assessment. However, the EDSFI identified three programmatic weaknesses: a lack of fuse control, an incomplete inverter testing program, and incomplete documentation for some mechanical support systems.

Engineering-related corrective actions for system and equipment problems were generally good. For example, design problems existed with the toxic gas monitors in the early part of the assessment period, which resulted in an inadvertent ESF actuation in both units. Design changes have been identified and, when they are installed, improved toxic gas reliability should result. In some instances, however, the implementation of modifications has been untimely. For example, a planned modification to prevent rainwater intrusion into the turbine building had not been implemented. Subsequently, a manual reactor trip had to be initiated because of rainwater intrusion into the steam generator feedwater pump speed control cabinet. Although the licensee implemented an effective trending program for the EDGs and aggressively pursued the fuel nozzle cracking issue, there continues to be a high rate of EDG unavailability.

Modification packages were found to be well written and complete. Considerable effort was noted in the identification of issues of safety significance. However, a significant backlog of design change notices against vendor drawings was considered a weakness. Although the temporary modification program was functioning properly, there were a number of temporary modifications that were more than 2 years old. This was indicative of a lack of effectiveness in making these temporary modifications permanent or in removing these temporary modifications.

The method of revising procedures resulting from plant modifications was a program weakness. The design change packages did not provide a summary of the modification to expedite the identification of the affected procedures. In this regard, the potential existed that all procedures requiring a revision as the result of a modification may not be revised.

The licensee's program for MOVs was conservative and complete with respect to identifying valves to be in the program. The design basis reviews and self-assessment of the program were considered strengths. Other strengths of the valve program included good design basis reviews; testing of a high percentage of valves at, or near, design basis conditions; and periodic dynamic testing.

Weaknesses in the program included the lack of providing feedback of information into the valve sizing calculations to validate original design assumptions and the lack of application of diagnostic system inaccuracies in the sizing calculations. As a result, as of the end of this assessment period, the adequacy of these MOV sizing calculations remained unresolved pending further NRC inspection effort.

The Engineering Department (Design Engineering, System Engineering, and Plant Programs) was staffed with highly skilled and motivated personnel. A good expression of teamwork was observed. Licensee management has recognized the need to make improvements in the manager and technical staff training program.

Several initiatives were indicative of licensee management involvement. These initiatives included comprehensive design basis documentation and probabilistic risk assessment programs; a reactor trip prevention program; the formation of a shutdown risk assessment group; and a task force in response to steam generator feedwater equipment problems. These initiatives have had mixed results. For example, the licensee's efforts to resolve several steam generator feedwater system component problems has been only partially effective.

During this assessment period, the NRC operator license examiners administered initial examinations in September 1991 and requalification examinations in February 1992 and performed a program evaluation in March 1992. All 28 operators evaluated during the requalification examinations and all 12 of the initial applicants passed all portions of their respective examinations. The requalification program evaluation was judged to be satisfactory. Crew communications, primarily observed during the dynamic simulator section of the operating examination, was an area of significant improvement. Emergency operating procedures usage, technical accuracy, and contingency coverage was also noted as an area of significant improvement. In addition, it was noted that timeliness in correction of previously identified procedural weaknesses was improved.

Two isolated areas of performance were noted to have declined in both the initial and requalification examinations. Generically, performance during the plant walkthrough section of the examinations, although satisfactory, was notably weaker than during previous examinations. Isolated failures, in several different areas, indicated some weakness in the walkthrough or in-plant training program. A specific area noted as being unsatisfactory was reactor operator knowledge of Radiation Monitor 11 operations. In a related inspection finding, the flow rate indication for a unit vent radiation monitor was not updating and went unnoticed for 5 days, even though the flow value was logged every shift. Another specific area noted as being unsatisfactory was reactor operator interpretation of posted radiological survey maps.

A pilot service water system operational performance inspection was conducted on the essential cooling water (ECW) system. The inspection focused on the ECW mechanical design, operational control, maintenance, and surveillance and evaluated aspects of the QA and corrective action programs related to the ECW

system. The inspection team concluded that the ECW system, as designed, operated, and maintained would be capable of performing its safety functions in accordance with the licensing basis for the plants.

Overall performance in this functional area was good. Effective engineering support was provided to the electrical distribution and supporting systems and there was prompt initiation of corrective action to most of the problems identified by the licensee's self-assessment. Corrective actions for engineering problems were generally good. However, the sizing calculations for some MOVs were questioned and remained unresolved pending further NRC inspection effort. The modification process was generally satisfactory. However, there was a significant backlog in vendor document changes, some temporary modifications were over 2 years old, and the process for revising procedures resulting from modifications was considered a program weakness. The Engineering Department was staffed with highly skilled and motivated personnel. Several initiatives were indicative of licensee management involvement. The South Texas Project QA organization provided significant oversight of the engineering activities. Improvements in the licensed operator requalification program were noted.

2. Performance Rating

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

3. Recommendations

None

G. Safety Assessment/Quality Verification

1. Analysis

This functional area includes all licensee actions associated with the implementation of safety policies, exemption and relief requests, responses to generic letters and bulletins, the resolution of safety issues, safety committee and self-assessment activities, analysis of industry operational experience, and the effectiveness of the licensee's quality verification functions.

This area was routinely inspected by the resident inspectors and periodically by Region-based inspectors. Regional initiative inspections included the review of the quality verification functions, design change and modifications program, audit program, offsite support staff, feedback of operational experience, and the corrective action program. A special inspection of the licensee's investigation of several employee integrity issues was also conducted.

The previous SALP report noted strengths in licensee submittals, staffing and training effectiveness, performance based QA audits, and the problem solving

process. The Operational Improvement Plan (OIP) was noted to be a proactive initiative. Weak areas identified included missed licensee event report corrective action implementation dates, inadequate root cause and corrective action development for complex issues, and occasional plant challenges resulting from less than adequate prioritization of problem resolutions. The SALP report recommended the licensee evaluate the self-assessment and corrective action processes to ensure that safety issues are identified, evaluated, and resolved.

During this assessment period, there were 15 license amendments issued for each unit. Other significant technical items reviewed by NRC were the licensee's submittal of its compliance with 10 CFR 50.63 (station blackout rule) and the licensee's request for exemption from 10 CFR 50.62 (the anticipated transient without scram rule). In addition, the staff completed its review of the internal events and fire protection portions of the licensee's Probabilistic Safety Assessment. Generally, the submittals were complete and demonstrated an understanding of both the technical and regulatory issues. Responses to staff requests for clarifying or additional information were typically timely and complete. The licensee's responses to NRC Bulletins and Generic Letters continued to be technically complete and timely.

During the assessment period, five temporary waivers of compliance were requested and two were granted, with three waivers subsequently not needed. The technical bases for the requests for waivers were generally good, with one exception. This exception pertained to a breakdown in the process for requesting a temporary waiver of compliance for a TS surveillance deficiency that was identified in May 1992.

Overall, management response to operational events was acceptable, with some exceptions noted. Actions were taken by management in response to plant events including the development of reactor trip prevention and reactivity management programs. The effectiveness of these initiatives has been mixed. The number of unnecessary reactor trips has been reduced, but safety systems continue to be challenged by unnecessary reactor trips. During one event, licensee management did not conservatively implement license requirements because of a belief that a temporary waiver of compliance could be obtained from NRC prior to taking the action to initiate a shutdown of both units. Contributing causes of this event included the hesitancy of station personnel to initiate a station problem report and a lack of specific guidance for operability determinations. This event was still being reviewed at the end of the assessment period.

The licensee implemented the OIP in the fall of 1990 to improve plant availability and reliability and to improve the work environment for its employees. The OIP implementation results were mixed. Plant availability and reliability have improved, in part, because of the OIP. The number of automatic reactor trips and forced outage rates have been reduced. On the other hand, several unresolved, long-standing equipment problems associated with the EDGs, the steam generator feedwater system, and the essential

chillers continue to challenge operations and maintenance personnel, as discussed in the Maintenance/Surveillance functional area of this assessment. Some human factor issues, such as maintenance department shift schedules and high rates of nonlicensed operator and maintenance craft overtime during extended outages remain to be fully resolved.

During the assessment period, reporting performance was mixed. Most LERs were of good quality. However, an ESF actuation caused by a failed diode was reported only after prompting by NRC. An additional inspection identified other examples of untimely reporting of events to the NRC Operations Center.

Licensee safety evaluations associated with modifications to the facility were of high quality, complete, well documented, and addressed the modification from a safety perspective. The licensee had a good 10 CFR 50.59 safety evaluation process. The procedures and controls for implementation of 10 CFR 21 requirements were found to be well defined and satisfactorily implemented.

The licensee's self-assessment and corrective action programs were evaluated as good. The licensee implemented a new corrective action program in response to observations that there was a varying degree of quality of corrective action responses among different groups. The new corrective action group reports directly to the plant manager, providing for the overall control of the program. These enhancements were still being implemented at the end of the assessment period and have not been fully evaluated by NRC.

The implementation effectiveness of these programs was generally good. For example, the licensee developed an aggressive, long-term plan to provide a resolution to ECW leaks. However, several weaknesses were observed, including the identification of an inadequate request for action resolution and the incomplete development of review criteria by the offsite review committee. In addition, some adverse conditions which could affect nuclear safety were improperly classified and processed as Severity Level 2 (not significant) instead of Severity Level 1 (significant) problem reports. As a result of this improper classification, the adverse conditions did not receive the additional reviews to assess the specific corrective actions and generic implications or a review by the Nuclear Safety Review Board. Further, a particular station problem report for a reactor trip that occurred on October 14, 1991, did not address all the noted adverse conditions encountered during the reactor trip.

The licensee's program for handling employee concerns (SPEAKOUT) was evaluated by NRC during this assessment period and was found to be generally effective. Most licensee employees and contractors who were interviewed appeared confident about discussing concerns with SPEAKOUT investigators. However, a review of a number of licensee investigation reports revealed that some of the investigations were limited in scope.

In the latter part of the assessment period, the NRC noted instances in which the licensee experienced difficulties in internal and external communications.

In regard to the former, an example involving senior management not being informed by the responsible line managers was identified by the special followup inspection team. As a result, timely corrective actions were not taken until senior management learned of a violation of escort control requirements. Another example was found in which the licensee did not disseminate concerns identified in a 10 CFR 2.206 petition to the responsible managers, thereby not providing the opportunity for input to the licensee's assessment and consideration of short-term corrective action for the issues presented in the petition. An example of external communication difficulties involved the licensee's handling of a request for a temporary waiver of compliance following the identification of a reactor trip system surveillance deficiency.

The program for handling and feedback of industry operational experience information appeared to be well defined and was being effectively implemented. However, although the specified actions regarding a number of items were completed and the items were considered to be closed, it was identified that over 450 operation event reports and station problem reports had not received a final review and concurrence by cognizant management in a timely fashion. This provided the potential for not identifying additional actions in a timely manner.

The licensee's QA program relating to audits appeared to be well structured, with organizational responsibilities and functions clearly defined. Audits were scheduled and performed by independent and qualified personnel, including technical specialists. The scope of audits was found to be comprehensive and audit findings reflected supportive and meaningful findings. Written responses to findings appeared to be timely.

The licensee's overall performance in this functional area was good; however, it declined from its previous superior level. Corrective action processes and implementation were generally good. Overall, management oversight of safety assessment and quality verification processes was acceptable. The quality of submittals to NRC were usually complete. Most LERs were of good quality, but not all NRC required reports were made within the required time period. The licensee's QA audit program was effectively implemented. Some examples of internal and external communication difficulties were noted. The results of various licensee improvement initiatives were mixed.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort in this area should be consistent with the core inspection program, with regional initiatives in the area of corrective action program changes.

b. Licensee Actions

None

V. SUPPORTING DATA AND SUMMARIES

A. Major Licensee Activities

1. Major Outages

The second refueling outage was completed for Unit 2 on December 16, 1991. Significant work completed included modifications to the reactor water makeup pump, reactor coolant pump seal inspections, steam generator tube inspection and shot peening, steam generator sludge lancing, ISI of safety systems, turbine generator disassembly and inspection, and inspection and cleaning of steam generator feedwater pumps and feedwater heaters.

A midcycle outage was completed for Unit 1 on April 15, 1992. This outage was conducted to repair the handhold covers on the secondary side of Steam Generators 1A and 1B and other emergent maintenance activities.

2. License Amendments

Fifteen operating license amendments were issued for each unit.

3. Significant Modifications

The licensee installed 181 modifications during the assessment period, with no major modifications installed in Unit 1. The following major modifications were installed in Unit 2:

- Elimination of the containment spray additive tanks;
- Deletion of the residual heat removal suction valve auto closure interlock;
- Modification of the reactor coolant system vent path piping;
- Replacement of the EDG intercooler expansion joints with pipe spools; and
- Turbine generator modifications consisting of a fiber optic vibration monitoring system, an upgraded stator cooling water and hydrogen system, replacement of the single tower hydrogen dryer with a dual tower dryer, and modifications to the throttle and governor valves.

B. Direct Inspection and Review Activities

NRC inspection activity during the assessment period consisted of 44 inspections, including several team inspections and special inspections. Approximately 5000 direct inspection hours were expended, which did not include contractor hours.