ENCLOSURE

INITIAL SALP REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBER

50-261/92-20

CAROLINA POWER & LIGHT COMPANY

H. B. ROBINSON UNIT 2

MARCH 31, 1991 - JUNE 27, 1992

TABLE OF CONTENTS

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 on the basis of 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 allocation of 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 August 13, 1992, to review the observations and data on performance, and to assess licensee performance in accordance with the NRC Manual Chapter NRC-0516, "Systematic Assessment of Licensee Performance." 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 H. B. Robinson for the period March 31, 1991 through June 27, 1992.

The SALP Board for Robinson was composed of:

E. W. Merschoff, Director, Division of Reactor Projects (DRP), Region II (RII) (Chairperson)
J. P. Stohr, Director, Division of Radiation Safety and Safeguards, RII
E. G. Adensam, Director, Project Directorate II-1, Office of Nuclear Reactor Regulation (NRR)
D. M. Verrelli, Chief, Reactor Projects Branch 1, DRP, RII
T. A. Peebles, Chief, Operations Branch, Division of Reactor Safety, RII
L. W. Garner, Senior Resident Inspector - Robinson, DRP, RII
B. L. Mozafari, Project Manager, Project Directorate II-1, NRR

Attendees At SALP Board Meeting:

H. O. Christensen, Chief, Reactor Projects Section 1A, DRP, RII
R. E. Carroll, Project Engineer, DRP, RII
S. J. Vias, Chief, Technical Support Staff, DRP, RII
C. R. Ogle, Resident Inspector - Robinson, DRP, RII
S. L. Fortuna, Program Manager, Special Issues Group, Nuclear Materials Safety and Safeguards, NRR

II. SUMMARY OF RESULTS

During the assessment period, H. B. Robinson was operated in an overall safe manner. The areas of Plant Operations, Radiological Controls, and Security were identified as strengths. Performance in the remaining areas was satisfactory.

Plant Operations were effectively controlled, showing considerable improvement over the last assessment period. Management oversight and involvement were evident in a number of areas, and a high degree of sensitivity to shutdown risk was demonstrated. Control room demeanor and communications during special evolutions were typically very good. Routine operations (i.e., procedure utilization, communications, alarm response, etc.) were considered adequate, but logkeeping practices required improvement. The station continued to maintain an effective fire protection program. However, problems were identified concerning procedure usage and work practices associated with inhibiting suppression systems for hot work activities.

Performance in the area of Radiological Controls continued to be strong. Reflective of management's support and involvement, as well as the technical staff's qualification and experience, the licensee's ALARA, contamination control, radwaste management, and environmental monitoring programs were very effective. There were, however, deficiencies identified in the contract technician training program; and program audits were found to be of limited effectiveness with respect to problem resolution.

The area of Maintenance/Surveillance continued to be mixed in performance. While there were no plant transients resulting from surveillance activities, a number of inadequate test procedures were identified. Similarly, equipment material condition was generally good, but notable exceptions existed. Component problems, mainly balance of plant, resulted in five periods of reduced power, as well as a forced shutdown and the only reactor trip. On the other hand, the maintenance organization was responsible for a high non-refueling outage availability factor and a continuous run record for the unit. Though personnel capabilities and qualifications continued to be a strength, staffing levels were insufficient to support existing maintenance programs and new initiatives. In addition, deficiencies identified in upgraded procedures reflects a need for increased management attention towards the maintenance procedure upgrade project.

Licensee performance in the Emergency Preparedness area remained satisfactory. Managers and staff members were well qualified for their positions, and related facilities and equipment were adequately maintained. The implementation of an emergency preparedness (EP) improvement program (established in response to exercise weaknesses in November 1991) resulted in EP training upgrades and overall enhancements in program management. As some aspects of the improvement program were still in the early stages of development, weaknesses were still evident in such program areas as protective action recommendations and estimating emergency radiological dose projection.

Overall, Security remained a strength. Management continued to aggressively support the safeguards program, resulting in an overall high level of performance by the site staff and contract security force. The licensee effectively resolved related technical issues, but the occurrence of repetitive compliance issues reflected the need for improved corrective actions and root cause analysis.

Engineering and Technical Support continued to exhibit satisfactory performance. Increased Nuclear Engineering Department and Technical Support involvement in site issues was evident. Technical Support's involvement and support in issue resolution was good; however, Engineering support had mixed results. Unlike the effective welding and inservice inspection programs, engineering involvement in the facility's erosion/corrosion program was not as aggressive or extensive. Though significant work was accomplished, the Technical Support improvement program and the emergency/ abnormal operating procedures upgrade projects progressed slowly.

The licensee's overall performance demonstrated a commitment to Safety Assessment/Quality Verification. Reflective of this commitment was the completion of electrical distribution system voltage calculations and the emergency diesel generator loading study; the minimization of shutdown risks; management's promotion of the design basis documentation and individual plant examination programs; a strong 10 CFR 50.59 program; and an effective Plant Nuclear Safety Committee. Notwithstanding these positive attributes, the licensee's corrective action program was not always effective in precluding recurrence of deficiencies as seen in the areas of Security and Radiological Controls.

Functional Area	Rating Last Period	Rating This Period
Plant Operations	2	1
Radiological Controls	1	1
Maintenance/Surveillance	2	2
Emergency Preparedness	2	2 (improving)
Security	1	1 (declining)
Engineering/Technical Support	2	2
Safety Assessment/ Quality Verification	2	2

III. CRITERIA

The evaluation criteria which were used, as applicable, to assess each functional area are described in detail in NRC Manual Chapter 0516. This chapter is in the Public Document Room. Therefore, these criteria are not repeated here but will be presented in detail at the public meeting to be held with licensee management on September 24, 1992.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

This functional area addresses the performance of activities directly related to operating the unit, as well as fire protection.

Overall, plant operations continued to be effectively controlled. Control room personnel maintained awareness of plant conditions, equipment status, and maintenance/testing activities in progress. Response to the only automatic reactor trip from power (resulting from a condensate pump failure) was effective in stabilizing the plant and done in accordance with procedures. This was an improvement over performance during the previous assessment period. Routine operations, such as procedure utilization and response to alarms, were acceptable. Logkeeping practices were not always adequate. For example, entries into limiting conditions for operation were not always documented as required by administrative procedures. Replacement of missing or damaged valve identification tags after refueling outage 14 showed improvement over the previous refueling outage. Control room drawings were legible and well maintained. As a result of the licensee's efforts, the number of lighted

annunciators was typically 6 or less and on occasions a black board was achieved.

Control room demeanor and communications were adequate during normal operations and typically very good during special evolutions. Like the previous assessment period, standard attire continued to be used by Operations personnel. Shift briefings, conducted as part of shift turnover, adequately addressed plant status and planned activities. However, there was an occurrence in which shift turnover activities contributed to a failure of the control room to promptly notify the refueling bridge personnel of an unexpected decrease in neutron count rate. During the latter part of the assessment period, management's commitment to improve command and control was demonstrated by the effective implementation of a formal process to review the details of new or infrequently performed activities with all involved personnel prior to beginning the evolution. During plant shutdowns, refueling operations and restarts, non-essential personnel entries into the control room were limited and shift communications and controls were formal and well executed.

Operations staffing exceeded Technical Specification minimum requirements and was sufficient to effectively support both routine and non-routine evolutions. Shift staffing, which consisted of four operating crews and a training/relief shift, was supplemented as necessary by licensed administrative relief personnel. Each shift was supervised by experienced senior reactor operators. Staffing levels were adequate to provide the required number of fire brigade members while performing emergency preparedness and emergency operating procedures. During refueling outage 14, additional personnel and management were provided to coordinate and oversee activities by restructuring the four shifts to provide two crews on each of two 12-hour shifts. Configuration control during the outage was effectively implemented by dedicated licensed operators assigned to the refueling outage clearance center, which was located outside the control room.

Effective management oversight and involvement was evident during plant shutdowns and restarts. During restart from refueling outage 14, normal

Operations supervision was supplemented by startup managers who provided 24-hour coverage. In the latter half of the assessment period, there was a noticeable increase in the Operations Manager's involvement during shift turnover meetings and during oversight of routine shift functions such as accompanying auxiliary operators on their rounds. Periodic management tours contributed to maintaining good housekeeping conditions in most areas of the plant.

During refueling outage 14, plant management demonstrated a high degree of sensitivity to shutdown risk by off-loading the core and scheduling work activities such that midloop operation was not necessary. Sensitivity to shutdown risk was also demonstrated by effective planning and precautions taken when both emergency diesel generators became inoperable.

The station continued to maintain an effective fire protection program. Positive program features included: good surveillance inspections and tests to verify Technical Specification requirements, audits, and adequate staffing. Problems with procedure usage and work practices, however, did result in an Alert declaration when the north cable vault suppression system unexpectedly actuated during grinding activities. The suppression system was not inhibited before authorizing the work, although signified as such on the hot work permit.

During the assessment period three violations were cited.

2. Performance Rating

Category: 1

3. Recommendations

None.

B. Radiological Controls

1. Analysis

This functional area addresses activities related to radiological controls, radioactive waste management, environmental monitoring, water

chemistry, and transportation of radioactive materials.

The radiation protection program continued to be effective in controlling personnel exposure to radioactive materials and protecting the health and safety of plant personnel and the public. The licensee had no external or internal radiation exposures approaching the regulatory limits during the assessment period.

Management support for the radiation protection program continued as evidenced by authorization and support for numerous equipment upgrades and technical enhancements, including remote cameras, improved personnel portal monitoring, a stand-up whole body counter, and a surrogate video tour system. In addition, management supported the reduction of radioactive material storage areas within the plant via consolidated storage in typically unfrequented areas.

The licensee continued to maintain an experienced and qualified technical staff. Staffing levels for Environmental and Radiation Control (E&RC) were sufficient to support both routine and outage activities. The training program for the licensee's E&RC technicians was adequate for both generic health physics training and task specific qualification. However, at the end of the assessment period, deficiencies were identified by NRC in the contract technician training program regarding the lack of task specific qualification and continuing training.

E&RC program audits were found to be of limited effectiveness, since processing of audit observations did not always result in satisfactory problem resolution. For example, improper personnel frisking was identified by NRC despite an earlier licensee audit observation addressing the same problem.

In addition to the above, a weakness in the licensee's internal radiation safety violation process was identified with regard to the identification of root causes associated with radiological incidents. Since root causes were not clearly specified, there was no assurance that adverse trends were being identified and corrective actions were being taken to prevent radiological performance problems.

The licensee effectively implemented an ALARA program to control and reduce personnel exposure at the facility. Collective dose for the assessment period was approximately 367 person-rem, which was reasonable considering the work activities for the 88 refueling days and 6 forced outage days during the period. The licensee's collective dose during routine operations continued to remain low, averaging approximately 0.190 rem per day. Outage duration and total personnel exposure for the assessment period was comparatively lower than the previous assessment period. Implementation of outage duration and exposure reduction efforts were effective in maintaining personnel exposures as low as reasonably achievable (ALARA). Better planning and scheduling, including full time outage coordinators, enabled effective coordination and incorporation of ALARA techniques into the outage work scope. Operational radiation control efforts included extensive use of mockups and training, experienced work crews, and job dedicated radiological control technicians (especially for many first time evolutions); effective use of water shields; and the successful second application of the reactor coolant system shutdown chemistry control program, which resulted in the removal of approximately 834 Curies of activity at the beginning of the outage.

The licensee's program for controlling contamination was effective. For example, the licensee maintained the contaminated floor space during non-outage periods to less than 2.0 percent of the non-containment vessel radiologically controlled areas. Additionally, personnel contaminations for the assessment period were 164, of which 118 occurred during refueling outage 14.

A good radiological environmental monitoring program was in place to detect the effects of radiological effluents and direct radiation. The program demonstrated that plant operations had caused minimum impact to the surrounding environment and virtually no dose to the general public. The liquid and gaseous effluent program for planned releases was well managed, as projected doses were well within the federal limits. Similarly, primary water chemistry was maintained well within Technical Specification requirements.

The licensee demonstrated that a good counting room radiochemical analysis program was in place. All detectors were within calibration, calibration curves were in order, and certificates of calibration were available and current. Daily source checks were documented and procedures were adequate. Proper sampling techniques and health physics practices were utilized.

The licensee's radwaste management program continued an aggressive effort to reduce the volume of radioactive waste generated and subsequently shipped to the disposal site. For 1991, the volume of such material was 2289 cubic feet. During the assessment period, shipping and handling of radwaste was observed once, as was shipping of spent fuel to Harris. The operations went well, reflecting the competence, training, and experience of the staff. Excluding an isolated instance of a degraded shipping container, good operational and administrative program implementation was demonstrated.

Other licensee efforts during this assessment period included actions to improve post accident sampling system (PASS) operations. Immediate operational improvements were achieved through the permanent removal of an unnecessary oxygen analyzer that had become a chronic maintenance and potential contamination problem due to a leaking cell. In addition, the licensee was also taking steps at the end of the assessment period to increase the number of technicians qualified to operate the PASS.

During the assessment period two violations were cited.

2. <u>Performance Rating</u>

Category: 1

3. <u>Recommendations</u>

None.

C. Maintenance/Surveillance

1. Analysis

This functional area addresses those activities related to equipment condition, maintenance, surveillance performance, and equipment testing.

Similar to the previous assessment period, effectiveness of the maintenance program was mixed. Safety system availability continued to be high (98%), and there were no maintenance personnel errors which resulted in a reactor trip or turbine runback. Equipment material condition was generally good as evidenced by well maintained plant structural features, a satisfactorily maintained electrical distribution system, and a low primary system leak rate. Notable exceptions included severe external pitting on the service water piping at the intake structure and the internal condition of some equipment (i.e., worn, corroded, or broken check valve internals). In addition, minor material conditions, such as spare electrical leads not properly secured and fasteners being loose or missing, were also noted. A condensate pump shaft break initiated the only reactor trip from power during the assessment period. Additional component problems, mainly balance of plant equipment, resulted in five periods of reduced power operation, as well as one of the two forced shutdowns. Notwithstanding these problems, the effectiveness of the maintenance organization in maintaining equipment necessary to support the operation of the facility was reflected in a high non-refueling outage availability factor (99%), as well as a continuous run record for the unit of 184 days.

Maintenance was not sufficiently staffed to support existing programs and new initiatives. A pilot program to provide continuous maintenance coverage demonstrated that maintenance staffing was not sufficient to support this effort, as well as other programmatic initiatives. Therefore, coverage on backshifts was reduced to an 8-hour shift during week nights. Personnel capabilities and qualifications continued to be a strength. Maintenance management continued a high level of visibility in the plant, performing plant tours and observing work in progress. At the end of the assessment period, construction had begun on a new

maintenance facility and maintenance staffing increases had been requested.

The maintenance improvement plan which was initiated in the previous assessment period to address self-identified weaknesses, as well as those identified by the NRC, was closed out by the licensee in January 1992. However, self-assessments and external audits conducted this assessment period identified concerns in the areas of work control, planning, and work practices.

During this assessment period steady progress was made in upgrading maintenance procedures. The maintenance procedure upgrade project, which was revised during the last quarter of the previous assessment period, provided for more consistent format and more detailed step-by-step instructions. However, two of the newly upgraded procedures were found to be technically inadequate, in that one had the potential for creating an undetectable emergency diesel generator common mode failure and the other could have resulted in non-qualified electrical splices on safety-related equipment. Additionally, a weakness was identified in that the upgrade project was not coordinated with Technical Support's preventive maintenance review project. Specifically, provisions were not provided to incorporate items identified by Technical Support into the maintenance procedures.

Performance in the surveillance area was also mixed. During the assessment period, there were no plant transients resulting from surveillance activities. Except for three examples, Technical Specification required surveillances were performed in accordance with procedures. The integrated leak rate test and the structural integrity test were well planned and controlled. However, a number of inadequate test procedures were identified. Examples included failure to completely test all emergency bus undervoltage load shed channels, diesel fuel oil not sampled in accordance with an approved methodology, and motor driven auxiliary feedwater pump start circuit not completely tested. This last item was identified by the licensee's Technical Specification instrumentation surveillance test review project.

During the assessment period four violations and one deviation were cited.

2. Performance Rating

Category: 2

3. Recommendation

Deficiencies identified in upgraded maintenance procedures are of concern. Increased management attention to the accuracy of maintenance procedures is appropriate.

D. Emergency Preparedness

1. Analysis

This functional area addresses activities related to the implementation of the Emergency Plan and its procedures, the training of onsite and offsite emergency response organizations, licensee performance during emergency exercises and actual events, and the maintenance of facilities and staffing for emergency response.

Adequate management support for the emergency preparedness program was evident during the period, as the licensee continued to maintain in a state of basic readiness the emergency preparedness elements needed to implement the emergency plan in response to emergency events. Robinson demonstrated an adequate response capability for dealing with site emergency situations during its annual graded exercise in November 1991. During the exercise, the licensee demonstrated it could execute the emergency plan and its implementing procedures, as well as take suitable actions to mitigate the consequences of the accident scenario. Emergency classifications were timely as the scenario progressed, and operations of the emergency response facilities and equipment during the annual exercise were good. Some performance strengths were observed during the exercise including the command and control exhibited by the Emergency Response Manager, setup and staffing of the emergency operations facility, and route planning for emergency response personnel.

The licensee's thorough self-critique was also considered a strength, identifying the complexity of the scenario and scenario control as areas

needing improvement. Four exercise weaknesses were identified concerning the performance of the emergency response organization. The exercise weaknesses included a failure to make complete notifications to the State and local governments, a failure to dispatch damage control teams in a timely manner, a failure to perform realistic dose assessments, and a failure to fully demonstrate the formulation of protective action recommendations.

Management oversight and support of the emergency preparedness program increased following the November 1991 exercise, as evidenced by the implementation of an emergency preparedness improvement program. This program, which included increased training and drills, resulted in an upgrade to the emergency preparedness training program via a dedicated emergency preparedness trainer and the development of job-specific lesson plans. The licensee demonstrated improved performance and effectiveness of the emergency response organization during a limited scope emergency preparedness drill conducted on March 26, 1992. However, at the end of the assessment period some aspects of the licensee's improvement program were still in the early stages of development and weaknesses in such program areas as protective action recommendations and estimating emergency radiological dose projection were still evident.

Other management enhancements made since the November 1991 exercise included the restructuring of the emergency preparedness function with the designation of a Manager of Emergency Preparedness who reports directly to the Robinson Site Vice President. The managers and staff members appeared to be well qualified for their positions. As part of the emergency preparedness improvement program, overall management attention improved late in the assessment period with the implementation of a new "ownership" philosophy for each emergency preparedness functional area by the cognizant manager.

Through periodic tests and surveillances, the licensee continues to maintain adequate facilities and equipment to respond to an emergency. The licensee's audit program was found to be effective in identifying conditions requiring corrective action, as well as recommendations for improvement.

Only one emergency plan revision was submitted during the assessment period and it was approved as submitted.

The licensee implemented its emergency plan in response to two events this period -- one at the Alert level and the other a Notification of Unusual Event. They were correctly classified and timely notifications were made.

During the assessment period, four exercise weaknesses were identified and no violations were cited.

2. Performance Rating

Category: 2 (improving)

3. Recommendation

None.

E. Security

1. Analysis

This functional area addresses those safeguard activities associated with the protection of the plant's safety-related vital equipment, the accountability of special nuclear material, and the effectiveness of the licensee's fitness-for-duty program.

Corporate and site management continued to aggressively support the safeguards program, resulting in an overall high level of performance by the site staff and contract security force. Management's support and involvement were demonstrated by equipment improvements, quality audits, and strong corporate oversight. In addition, planning for the recent retirement of a key member of the corporate nuclear security staff was excellent, in that the assignment of priorities by corporate and site management assured the smooth transition of his replacement. Quarterly meetings with all the site security managers and their corporate counterparts have been conducted at the sites. These meetings resulted in a greater familiarity with other programs and generic approaches to problem resolution.

At the site, security shift staffing remained adequate; management of the contract force was effective; procedures were technically sound; and compensatory posts, needed because of failed security equipment, were reduced.

Licensee audit findings were accurate and thorough; no programmatic failures were identified. Audit findings were addressed by the appropriate levels of management to ensure timely resolution of any findings.

The licensee effectively resolved technical issues. For example, the recent installation of new X-ray search equipment enhanced the licensee's ability to control packages being brought onsite. In addition to using outside expertise for camera assessment improvement, the licensee also effectively repaired cameras, television monitors, and intrusion detection equipment.

The Security training program, which included force-on-force drills with newly acquired laser engagement equipment, improved the licensee's contingency capability, as has new weaponry. Offsite law enforcement response agencies received the annual full day site orientation as part of the licensee's training program.

Although apparently corrected by the end of the assessment period, several compliance issues were identified that reflect the clear need for improved corrective actions and root cause analysis. For example, there were repetitive indications of a decline in security officer performance during routine duties (i.e., two occasions where officers vacated their access control posts without authorization and two other occasions where officers testing alarms failed to ensure the alarms were reset prior to their departure from the areas). Another example, which did not involve security officers, concerned several instances of photo-badges being available to terminated individuals.

In the area of special nuclear material control, the licensee failed to store such materials in a restricted and secured area. This problem has since been adequately corrected. Spent fuel shipments during the assessment period continued without deficiencies.

With respect to the fitness-for-duty program, the licensee met or exceeded all requirements. Strengths were noted in staffing, the collecting facility, and program administration.

Security plan changes did not decrease the effectiveness of the overall program and were well coordinated with the NRC.

During the assessment period three violations were cited.

2. Performance Rating

Category: 1 (declining)

3. Recommendations

Based on the repetitive nature of identified security compliance issues, efforts should continue to assure that corrective actions are focused on root cause.

F. Engineering/Technical Support

1. Analysis

This functional area addresses those activities associated with the design of plant modifications; engineering and technical support for operations and maintenance; and licensed operator training.

Engineering and technical support continued to be effective in most cases. The Nuclear Engineering Department (NED) and Technical Support Unit demonstrated an increased involvement and responsiveness to engineering and technical support issues at the site.

Significant inadequacies in engineering design control and interfaces associated with past design modifications were identified during this assessment period. In spite of the increase in engineering involvement at the site, some of the modifications developed during this assessment period also contained engineering design deficiencies. For example, a residual heat removal (RHR) system minimum flow modification specified RHR system changes which would have inadvertently removed the capability to warm the RHR system prior to placing it in shutdown cooling and a safety injection relief valve removal

modification inadvertently created an unmonitored release path. However, the quality of the installation instructions contained in modifications improved as indicated by a significant decline in the number of field revisions during refueling outage 14 as compared to refueling outage 13. The decline was attributed to improved reviews by both corporate engineering and plant personnel, especially those conducted by the plant system teams.

The quality of engineering support was mixed. Good support was evidenced by the timely reduction in core damage frequency contribution from two accident sequences identified in the licensee's individual plant examination program; development of a fuse list; preparation of a number of new design guides to address issues such as periodic inspection of plant structures to monitor the overall condition of site safety-related structures; and continued development of electrical calculations in support of the electrical system improvement program. However, the engineering evaluation (concerning identified discrepancies in loss of coolant analyses) which was performed to support the unit's May 29, 1991 return to full power was not thorough, in that it failed to utilize the proper model in accordance with 10 CFR Part 50, Appendix K.

Technical Support's involvement in issue resolution during normal operations and refueling activities was good. Technical Support personnel demonstrated sound engineering judgement and timely support in the resolution of emergent issues such as the component cooling water check valve repairs and stud replacement, and a reactor protection system isolation amplifier failure. During refueling outage 14, around the clock engineering coverage was provided by both Technical Support engineers and supervision. In addition, dedicated engineers were assigned responsibility for special activities such as the integrated leak rate test and structural integrity test.

Management has continued to address the limited technical support of routine plant activities which was discussed in the three previous assessment periods. Increased management emphasis on completion of routine system engineer duties, as well as support for initiatives such as system

teams, resulted in an adequate level of support to routine activities. The routine involvement of system engineering in tracking and facilitating repair of malfunctioning control room instrumentation and equipment was a good practice. Increased system engineer involvement in routine activities was evidenced by the determination, through trending, that there were high emergency diesel generator (EDG) exhaust temperatures and the identification of missed lubrication points on the EDGs. The system engineer's identification of missed EDG lubrication points during a system walkdown resulted from a strong sense of system ownership. Increased system engineer involvement was also demonstrated in problem identification and resolution as evidenced by the identification of a single electrical cable passive failure which would have adversely affected the EDG ventilation system.

Implementation of the Technical Support improvement program was slow. Although significant work was accomplished, the majority of items had been extended. Extended items included component engineer development, the managed valve maintenance program, procedure writer's guide development, and the performance monitoring program.

A weakness (identified in the previous two assessment periods) in the method for prioritizing and tracking Technical Support open items was addressed by the end of this assessment period. Open items had been grouped into three categories -- active, backlog and enhancements; and estimated manpower requirements had been developed for each item. The total number of open items has remained fairly constant (approximately 1400). With contractor assistance, the number of backlog items began to decline during the latter part of the assessment period.

The welding and inservice inspection programs were effective during this assessment period. Actions taken with regard to ultrasonic examination of feedwater system piping to the steam generator nozzle/reducer welds were aggressive. Management involvement in these activities was apparent by their commitment to re-examine all of these welds during the next outage to record any changes.

A motor-operated valve (MOV) testing and surveillance program was developed for which only portions adequately addressed the Generic Letter 89-10 recommendations. Strengths were noted in the program relative to training, the number of valves tested under differential pressure, design basis reviews for thermal overload sizing, and licensee industry involvement. Notwithstanding these strengths, there were numerous problems identified, especially with the plant implementing procedures. In addition, erroneous differential pressure calculations resulted in feedwater isolation valves being improperly adjusted so they would not have closed under certain accident conditions. These problems indicated a lack of overall management attention and priority to the MOV program.

Engineering involvement has not been aggressive nor extensive for the erosion/corrosion (E/C) program at Robinson. The licensee committed minimal site engineering resources to inspection and evaluation of E/C. There was no evidence of corporate NED involvement in this program, as it was directed by one engineer relying heavily on engineering judgement to determine inspection schedules, component replacement, and material selection.

An effective licensed operator training program was demonstrated by the 100 percent pass rate on the initial examination administered in July 1991. However, during the initial examination some weaknesses were observed in crew communications, inconsistent use of annunciator response procedures, inconsistent methods for the removal of failed instruments from service, and slow analysis of safety injection flowpath problems. Examination material provided by the facility was adequate to support the examination.

The emergency operating procedures (EOP) and abnormal operating procedures (AOP) upgrade projects progressed slowly during this assessment period. Some progress towards resolving EOP program weaknesses (identified two assessment periods ago) was made by the development and upgrade of such programmatic and administrative documents as the writers' guide and the verification and validation procedures. However, the resources allocated to the EOP and AOP upgrade projects were insufficient to complete the actual

rewrite of the procedures by the licensee's original December 1991 commitment. Consequently, the projects' completion date was extended to March 1993.

The onsite control room simulation facility for operator training and evaluation was certified by the facility to the NRC in March 1991. During NRC administrated examinations, the simulation facility generally performed well, with only minor problems noted.

During the assessment period five violations were cited.

2. Performance Rating

Category: 2

3. Recommendations

The board is concerned with the slow progress being made in resolving weaknesses in EOPs and AOPs, and in the limited attention being given to the errosion/corrosion program. Management attention in these areas is appropriate.

G. Safety Assessment/Quality Verification

1. Analysis

This functional area addresses those activities related to licensee implementation of safety policies; license amendments, exemptions, and relief requests; responses to Generic Letters, Bulletins, and Information Notices; resolution of safety issues; reviews of plant modifications performed under 10 CFR 50.59; safety review committee activities; and the use of feedback from self-assessment programs and activities.

During the assessment period, the licensee demonstrated a good understanding of issues and showed clear knowledge of NRC regulations, guidance, and safety concerns. Appropriate, knowledgeable personnel were involved whenever technical issues were addressed. Interaction with the NRC on licensing and other technical issues was effective. Submittals in support of license amendments, reliefs, and other plant specific licensing issues were generally of good quality with respect to thoroughness and clarity. This

was attributed in a large degree to a competent licensing engineering staff.

The licensee's commitment to safety was evidenced by the completion of their electrical distribution system voltage calculations and the emergency diesel generator loading study. These studies, along with hardware and procedural changes, completed the licensee's electrical system improvement program initiated in response to issues identified in the Safety System Functional Inspection and NRC reviews of related issues in 1987-1988. Management's commitment to identifying and resolving safety concerns was also demonstrated by the development of an inspection guide for monitoring seismic Category I structures.

Programs and functions required by regulations were adequately implemented. For example, the 10 CFR 50.59 review program was a strength, producing quality evaluations which reflected a clear understanding of safety significance. Particular strengths of the program are the mandatory checkpoint to ensure that the design basis is addressed in the safety review and the task force established to monitor the reviews. Licensee Event Reports were also adequate, being issued as required and appropriately supplemented.

Management's commitment to improve plant safety was evident in the design basis documentation (DBD) and individual plant examination (IPE) programs. The DBD development has been completed with one aspect, reactor vessel level indication system, remaining to be validated. DBD utilization in modification development enhanced the modification process. As discussed earlier in Section IV.F., the IPE effort identified two accident sequences that were major contributors to the total core damage frequency estimates.

The Nuclear Assessment Department (NAD), initiated in January 1991, remained in a formative stage during most of the assessment period. Staffing of the new organization's key positions was not aggressively pursued (i.e., the site assessment manager and engineering/technical support lead positions were not permanently filled until October 1991, and March 1992, respectively). Early NAD audits were only oriented toward problem identification as exemplified by the Environmental

and Radiation Control audit discussed in Section IV.B. However, in the last quarter of the assessment period, a significant improvement in audit quality was reflected in audits that also focused on root cause determinations.

A revised corrective action program was implemented in the later part of the previous assessment period. Though the corrective action program was an improvement over the previous one, it was not always effective in precluding recurrence of deficiencies. For example, as discussed in Sections IV.B and IV.E, corrective actions were not effective in preventing repetitive occurrences of deficient radiological work practices and security compliance issues.

The licensee's performance of oversight functions continued to be adequate with appropriate management involvement in safety decisions. Oversight activities were demonstrated by management's continuation of weekly material condition inspections and emphasis on direct oversight of work activities. Also, the Plant Nuclear Safety Committee (PNSC) routinely handled safety issues in a technically sound and conservative manner. However, during its initial review of the Technical Specification Waiver of Compliance request concerning undervoltage channel testing, the PNSC became more involved in developing the request than reviewing its safety aspects. Management involvement in safety was evident in the minimization of shutdown risk during the refueling outage as discussed in Section IV.A, as well as in other activities. Safety issue and industry event awareness was promoted by the periodic publication and wide distribution of the Operation Experience Feedback - Nuclear Events newsletter and inclusion of selected events on the Robinson video information system.

During the assessment period no violations were cited.

2. <u>Performance Rating</u>

Category: 2

3. <u>Recommendations</u>

None.

V. Supporting Data

A. Licensee Activities

The unit began the assessment period at full power and ended the period in power ascension after completion of refueling outage 14. Unit availability factor for the period was 80 percent (99 percent when refueling outage is excluded). Also during the period, the unit achieved a continuous run record of 184 days. One reactor trip from power occurred during this period (discussed in section V.F.) and three outage related shutdowns occurred, one of which commenced refueling outage 14. In May 1991, the unit operated at reduced power levels for 15 days while issues associated with emergency core cooling system transfer to recirculation phase were resolved. On August 16, 1991, the unit was shutdown for two days to remove time delay capacitors from the over temperature delta temperature protection circuitry. Except for the one day down time associated with the reactor trip, the unit operated until September 27, 1991, when the turbine generator was removed from service for one day to repair a steam leak. On March 17, 1992, power was reduced to inspect a heater drain pump. Fuel depletion resulted in operation at a reduced power level for the remainder of the cycle, which ended on March 27, 1992. Refueling outage 14, scheduled for 70 days, was completed in 88 days. Difficulties encountered during the installation and testing of the residual heat removal pumps' increased capacity recirculation line, safety injection system relief valve removal, and refueling equipment repairs were the major contributors to the outage extension.

During the assessment period, several management changes occurred: the Operations Manager was promoted to Plant General Manager; a previous outage manager, who had newly received a senior reactor operator license, assumed the Operations Manager position; a mechanical maintenance supervisor from the Shearon Harris project replaced the Maintenance Manager; and a new Regulatory Compliance Manager was selected. In addition, the Nuclear Assessment Department site manager position was filled for the first time; and a newly created Emergency Preparedness Manager position (which reports directly to the site Vice President) was also filled.

B. Direct Inspection and Review Activities

During the assessment period, one special audit, 32 routine and 4 special inspections were performed at H. B. Robinson by the NRC staff. The special audit and inspections were:

- September - October 1991; Electrical Distribution System Functional Inspection
- October 28-29, 1991; Fitness-For-Duty Program Inspection
- June 10-14, 1991; Motor-Operated Valve Inspection
- March 26-27, 1992; Emergency Preparedness Program Status Review
- April 13-17, 1992; Structural Audit

C. Escalated Enforcement Actions

1. Orders

None.

2. Civil Penalties (CP)

Severity Level III violation (EA 91-142) for inadequate engineering design control and interfaces, resulting in the failure to verify the adequacy of the Reactor Protection and Safety Injection Systems ($37,500 CP).

D. Management Conferences

During the assessment period there were six significant management conferences with the licensee. These were:

- May 30, 1991; Management Meeting to discuss ECCS operation and a LOCA analysis calculational error.
- June 11, 1991; Management Meeting to discuss SALP cycle 9 assessment.
- November 6, 1991; Enforcement Conference to discuss control measures related to LOCA analyses and OT delta T modifications.

- December 20, 1991; Enforcement Conference to discuss the apparent improper classification of emergency events.

- January 31, 1992; Management Meeting to discuss technical and management issues associated with the safety injection system.

- March 11, 1992; Management Meeting to discuss H. B. Robinson's self-assessment and outage risk management.

E. Confirmation of Action Letters

None.

F. Reactor Trips

One automatic reactor trip from power occurred during the assessment period. On August 30, 1991, the unit tripped from 100% power when the B condensate pump shaft sheared. This induced a feedwater transient and a subsequent low steam generator level coincident with a steam/feedwater flow mismatch reactor trip. The unit was returned to service the next day.

G. Review of Licensee Event Reports (LERs)

During the assessment period a total of 20 LERs were analyzed. The distribution of these events by cause, as determined by the NRC staff, was as follows:

Cause	
Component Failure	4
Design	6
Construction, Fabrication, or Installation	
Personnel	
- Operating Activity	3
- Maintenance Activity	
- Test/Calibration Activity	5
- Other	
Other	2
Total	20

Note 1: With regard to the area of "Personnel Errors", the NRC considers lack of procedures, inadequate procedures, and erroneous procedures to be classified as personnel error.

Note 2: The "Other" category is comprised of LERs where there was a spurious signal or a totally unknown cause.

H. Licensing Activities

During this assessment period, 29 licensing issues were resolved. This included 8 license amendments, 3 relief requests, and 18 other licensing actions. Review was completed for 5 multiplant activities. The most significant of these were NRC Bulletin 88-08 and the Station Blackout Analysis to Meet 10 CFR 50.63, which is due to be implemented in 1993.

I. Enforcement Activity

	NO. OF DEVIATIONS AND VIOLATIONS IN EACH SEVERITY LEVEL					
FUNCTIONAL AREA	Dev.	V	IV	III	II	I
Plant Operations		1	2			
Radiological Controls		1	1			
Maintenance Surveillance	1	4				
Emergency Preparedness						
Security			3			
Engineering/Technical Support			4	1		
Safety Assessment/Quality Verification						
TOTAL	1	2	14	1		