ENCLOSURE

INITIAL SALP REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBER

50-261/91-10

CAROLINA POWER AND LIGHT

H. B. ROBINSON

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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 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 May 15, 1991, 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 NRC's assessment of the licensee's safety performance at H. B. Robinson, for the period January 1, 1990 through March 30, 1991.

The SALP Board for H. B. Robinson was composed of:

E. W. Merschoff, Deputy Director, Division of Reactor Projects (DRP), Region II (RII) (Chairperson)
C. A. Julian, Chief, Engineering Branch, Division of Reactor Safety, RII
B. S. Mallett, Deputy Director, Division of Radiation Safety and Safeguards, RII
D. M. Verrelli, Chief, Reactor Projects Branch 1, DRP, RII
L. W. Garner, Senior Resident Inspector, Robinson, DRP, RII
H. N. Berkow, Director, Project Directorate II-2, Office of Nuclear Reactor Regulation (NRR)
R. H. Lo, Senior 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
G. R. Wiseman, Technical Support Staff, DRP, RII
K. R. Jury, Resident Inspector, Robinson, DRP, RII
M. T. Markley, Operations Engineer, Division of Licensee Performance and Quality Evaluation, NRR

II. SUMMARY OF RESULTS

Overall, Robinson has been operated in a safe manner during the assessment period. The areas of Radiological Controls and Security remained strengths. Performance in the remaining areas was satisfactory.

Performance of Operations continued to be effective. Actions taken to reduce shutdown risks were significant and emphasis on operating experience/enhanced site performance continued. Good operator response to plant transients and improved communications for non-routine evolutions was demonstrated. However, operator errors resulted in one of the two reactor trips experienced, as well as a reactor protection system actuation while shutdown. Although an effective fire protection program was maintained overall, actions taken with respect to a fire at another Carolina Power and Light facility were not effective in precluding a similarly induced fire inside H. B. Robinson's containment.

The area of Radiological Controls continued to exhibit strong performance. Overall quality, technical capability, and experience level of the health physics staff continued to be strengths. Related programs (e.g., contamination control, ALARA, effluent monitoring, and chemistry) were effectively implemented and produced good results. Management involvement/support was evident and deficiency identification processes such as audits were effectively utilized. During the outage, personnel were not always attentive to proper anti-contamination clothing dressout details.

The Maintenance/Surveillance area produced mixed performance. Maintenance personnel capabilities and qualifications were considered strengths, with no personnel errors resulting in a reactor trip or turbine runback. Equipment material condition was generally good and safety system availability was greater than 98 percent; however, equipment degradation due to plant aging was a significant maintenance problem. Although the inservice inspection program was effective, several concerns were identified in the inservice testing program.

In the area of Emergency Preparedness, licensee performance was satisfactory. The emergency response organization was upgraded by implementing a beeper system. The emergency response facilities were well maintained. However, corrective actions were initially ineffective in the area of staff augmentation. The licensee continued to show weakness in the area of emergency classification.

Security continued to be a strength. Preparatory actions for a spent fuel shipment and the continued high management support for the security program were notable.

Performance in the area of Engineering and Technical Support was satisfactory. The Nuclear Engineering Department (NED) and Technical Support demonstrated good communications and interface. The NED has shown a high level of onsite involvement in the development and implementation of modifications. Management's commitment to improve Technical Support's performance was demonstrated by the issuance of a Technical Support Improvement Plan. However, weaknesses were noted with the strained Technical Support staffing, as evidenced by the high amount of overtime during the refueling outage and the inconsistent support provided for routine plant activities. The number of backlog items in the engineering area continues to be large.

The licensee's commitment and involvement in the Safety Assessment/Quality Verification area was evident. The Plant Nuclear Safety Committee, Onsite Nuclear Safety, and the licensee's 10 CFR 50.59 process were effective. However, management's visibility in the plant was not consistent throughout the assessment period. The Quality Assurance/Quality Control and corrective actions programs have demonstrated inconsistent results.

Functional Area	Rating Last Period	Rating This Period
Plant Operations	2	2
Radiological Controls	1	1
Maintenance/Surveillance	2	2
Emergency Preparedness	2	2
Security	1	1
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 files. Therefore, these criteria are not repeated here, but will be presented in detail at the public meeting to be held with licensee management on June 11, 1991.

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. A total of 1485 inspection-hours were expended in this functional area, comprising 31% of the total inspection-hours.

The performance of Operations continued to be effective. Control room personnel maintained awareness of plant conditions, equipment status, and maintenance/testing activities in progress. Response to alarms and logkeeping improved since the last assessment period. A small number of lighted annunciators were present during normal operations, half of which required engineering action to eliminate. The responses to both automatic reactor trips were proper and in accordance with procedures, as was the operator response to a turbine runback initiated by a loss of power to the control rod position indication system.

However, operator errors caused one of the two automatic reactor trips, as well as a reactor protection system actuation while draining a steam generator during refueling outage 13.

Operations' staffing exceeded Technical Specification requirements and was sufficient to effectively support routine, non-routine, and outage operations. Shift staffing, which consisted of four operating shifts and a training/relief shift, was appropriately supplemented by licensed administrative/relief personnel when necessary. Management's continued emphasis on operating experience for senior level positions was reflected in the promotion of the Operations Manager to the position of Plant General Manager and the subsequent filling of the vacated Operations Manager position with a licensed engineering supervisor. The licensee's commitment to enhance site performance continued through the rotation of licensed personnel within Operations and into other departments. These rotational assignments occurred in Training, Outages and Modifications, and the Operations' procedure writing group. In addition, licensed personnel were transferred to Maintenance and Training.

Control room demeanor and communications involving routine operations were informal, yet effective. Shift turnover meetings included preplanned activity discussions, as well as plant status. Communications associated with non-routine evolutions improved from the previous assessment period. This was demonstrated by special shift briefings held immediately prior to the performance of major surveillance, modification, or special tests. During plant startups, non-essential entries to the control room were limited, and shift communications and control were formal and well executed. Like the previous assessment period, standard attire continued to be used by Operations personnel.

Effective management oversight and involvement was evident during plant restarts. This was accomplished through direct observations by the Operations Manager and the utilization of startup managers. In comparison, management involvement in routine plant operations was deficient as demonstrated by the lack of routine management tours and work observations in the auxiliary building and control room. Improvements were observed in this area during the second half of the assessment period.

Housekeeping in most areas of the plant was good. Materiel condition and housekeeping concerns were occasionally identified in areas not frequented by management. Containment was an area which warranted increased management attention. During the latter part of the assessment period, increased routine management tours resulted in improved housekeeping.

Significant actions were taken by the licensee to reduce safety risks while the unit was shutdown. These actions included scheduling to avoid mid-loop operations, maintaining both emergency busses operable during critical evolutions, and utilization of a redundant temporary cooling system for emergency diesel generators and the spent fuel pool. In addition, the licensee has continued to address long-term issues. A program was implemented to address emergency operating procedure program weaknesses which were identified in the previous assessment period. A generic applicability document and revised plant-specific technical guidelines were issued. Incorporation of human factors concepts and use of a revised validation process were being implemented at the end of the assessment period.

Overall, the licensee continued to maintain an effective fire protection program. Reorganization of the site fire protection staff has had a positive effect on the long-term management of the fire protection program. This was evidenced by self-identification and correction of potential programmatic problems with fire barrier penetration seals. However, actions taken with respect to a temporary services induced fire at another Carolina Power and Light (CP&L) facility were not effective in precluding a similarly induced fire inside H. B. Robinson's containment. The fire brigade demonstrated good performance through their timely and proper responses to this fire and to a diesel generator exhaust smoke initiated fire alarm. Additionally, fire protection personnel were knowledgeable of their responsibilities and requirements. Fire protection features were satisfactorily maintained.

No violations were cited.

2. Performance Rating

Category: 2

3. Recommendations

The occurrence of the fire in containment brings forth considerable concern, in that it could have been avoided through lessons learned from a similarly induced fire at another CP&L nuclear facility. Accordingly, increased management attention in this area is warranted. The normal level of inspection is recommended.

B. RADIOLOGICAL CONTROLS

1. Analysis

This functional area addresses those activities related to radiological controls, radioactive waste management, effluent and environmental monitoring, water chemistry, and transportation of radioactive materials. A total of 269 inspection-hours were expended in this functional area, comprising 6% of the total inspection-hours.

The radiation protection program continued to be effective in controlling personnel exposures to radioactive materials and protecting the health and safety of the workers. The licensee had no internal or external radiation exposures greater than regulatory limits and no significant safety or technical issues concerning the radiation protection activities were identified.

Strong management involvement in the radiation protection program was evidenced by management's authorization and support for numerous radiation protection program improvements. Included among these were assurance of appropriate vendor Health Physics (HP) technician support; upgrade of plant radiation monitoring systems; purchase of new personnel radiation monitoring equipment; and various "As Low As Reasonably Achievable" (ALARA) dose reduction projects. Additional initiatives to increase the radiation protection program effectiveness included the review and enhancement of Environmental & Radiological Control (E&RC) procedures. This effort utilized input from workers concerning dose reduction, improved worker efficiency, safety and procedure compliance.

The E&RC audits were effectively performed. These audits were well planned, adequately documented, and identified substantive items. When deficiencies were noted, the licensee responded to audit findings with commitments to effect corrective actions. A radiation safety violation identification process was also effectively utilized by the licensee to identify and correct radiation protection program weaknesses.

Control of radioactive material released from radiation control areas was identified as a program weakness during the previous assessment period. The licensee took appropriate corrective action, including a more comprehensive survey program, to prevent recurrence.

The licensee's ALARA program was administered by a qualified and experienced ALARA staff that reported directly to the plant E&RC Manager. Other plant management personnel served on the

ALARA Committee and participated in the Committee's activities. The ALARA program has successfully implemented numerous dose reduction programs including: adoption of an ALARA suggestion award program; modified shutdown chemistry control to reduce source term levels; use of high efficiency filters in spent fuel and reactor coolant systems which reduced source terms; video taping of high dose jobs for future reference; and purchasing alarming dosimeters. ALARA awareness was also promoted on the plant video system and plant newspaper. Most of the tasks performed during the assessment period received pre-job ALARA reviews and briefings. ALARA specialists maintained awareness of current dose reduction methods by attending Radiation Exposure Management Seminars and Region II Licensee ALARA Supervisors Meetings.

The licensee's radiation protection staffing level for HP, radwaste, and transportation functions were sufficient to support both routine and outage operations. The staff's experience level was good and staff turnover rate during the assessment period was low. The overall quality, technical capabilities, and experience level of the HP staff and the program for reviewing and qualifying vendor HP personnel continued to be program strengths. The training programs for general employee radiation protection, and both site and vendor HP technicians were well defined and continued to be effective. Other staff personnel attended training sessions on implementation of the new 10 CFR 20.

Emergent work extended refueling outage 13 and significantly increased the collective personnel dose. The licensee met the 1990 person-rem goal of 450 with 437. Source term reduction and ALARA implementation were the major factors in meeting this goal. However, due to the extension of the refueling outage, the 1991 collective person-rem goal of 100 was exceeded in March with 145. Overall, the outage dose was not excessive considering duration, type, and quantity of work in the radiological controlled areas.

The licensee's contamination control programs were good. Contaminated floor space was maintained at a very low level. Excluding containment, approximately 87,000 square feet was included in the contamination control program. During non-outage periods, the contaminated area was normally less than two percent. Activities in contaminated areas resulted in 316 personnel contaminations. This total was lower than for previous years having a similar amount of work in contaminated areas. However, during refueling outage 13, personnel were not always attentive to proper anti-contamination clothing dressout details.

Corporate support for the radiation protection program was evidenced by the development of a 10 CFR 20 Implementation Committee to define, coordinate, and schedule a plan for meeting the new regulatory requirements. The corporate radiation protection staff also supplied personnel to support ALARA program activities during refueling outages.

Programs to control, quantify, and monitor radioactive effluents and releases were effective. There were no unplanned releases and the amount of liquid effluent released was low. Doses to the public in 1990 were less than 1 percent of the 10 CFR 50, Appendix I annual limits. During 1990, the licensee completed upgrading their radiation monitoring system (RMS) to a state-of-the-art microprocessor-based digital system. This upgrade improved the operability and reliability of the RMS. The team that was formed to plan and implement the upgrade was considered a strength.

The program for controlling, tracking, and trending primary and secondary chemistry parameters was good. Primary and secondary chemistry parameters were generally maintained within Robinson internal action limit guidelines. Important secondary chemistry parameters were tracked and corrective actions were taken when needed to bring these parameters back into limits. The licensee was in agreement with all four of the Confirmatory Measurements Program's radioisotopes and with all the isotopes measured as part of an onsite NRC split sample inspection.

No violations were cited.

2. Performance Rating

Category: 1

3. Recommendations

A reduced level of inspection effort should continue.

C. MAINTENANCE/SURVEILLANCE

1. Analysis

This functional area addresses those activities related to equipment condition, maintenance, surveillance performance and equipment testing. A total of 1263 inspection-hours were expended in this functional area, comprising 27% of the total inspection-hours.

Effectiveness of the maintenance program was mixed. Safety system availability was greater than 98 percent and there were no maintenance personnel errors which resulted in a reactor

trip or turbine runback. One reactor trip was attributed to a component failure and one turbine runback resulted from a degraded electrical connection. Equipment materiel condition was generally good; however, during refueling outage 13 the condition of service water pipe and component cooling water heat exchangers was found to be degraded. At the end of the assessment period, Technical Support had initiated a systematic review to define performance monitoring and preventive maintenance programs for selected safety-related systems. This review is scheduled for completion at the end of 1993. However, a comprehensive program to address facility aging has not been initiated. Weaknesses were identified in post-maintenance testing, the repetitive failure program, the equipment database, the allocation of resources, maintenance trending, backlog assessment, management oversight of routine activities, and the maintenance shop facilities. Strengths were noted in the areas of personnel capabilities and qualifications.

Management demonstrated a commitment to address identified weaknesses and effect improvements in maintenance by the issuance of a Maintenance Improvement Plan in October 1990. The plan incorporated issues from maintenance personnel interviews, as well as from external audits such as the maintenance team inspection. At the end of the assessment period approximately 30 of the 71 identified items had been addressed; all short-term items were scheduled for completion by the end of 1991. Resultant improvements included emphasis on customer/supplier relationship with Operations and increased supervisory tours and work activity oversight. Management oversight demonstrated significant improvement during the latter half of the assessment period.

Progress on some programmatic initiatives has been slow however. The licensee determined that the maintenance procedure upgrade program initiated in May 1989, though providing improved procedures, was not consistently correcting identified deficiencies, e.g., those related to human factors. A lack of procedural detail in an upgraded procedure contributed to the improper installation of a safety injection pump thrust bearing. In the last quarter of this assessment period, the established program was phased out and a new upgrade effort was initiated utilizing contractor expertise. This new maintenance procedure upgrade program, which encompasses approximately 500 maintenance procedures, including the 247 procedures issued under the discontinued program, is scheduled for completion at the end of 1992. In addition, the licensee has been slow in developing and implementing a check valve inspection program.

The licensee addressed weaknesses identified in the last assessment period with mixed results. Procedural adherence improved; however, occasional problems still occurred in this area. During the refueling outage, work control was occasionally not adequate. Examples of this included: cutting of a Freon line during a modification installation resulted in an Alert emergency classification; the primary and backup gas supplies to the cavity seal were found to be isolated with the reactor defueled and the cavity flooded; and a non-approved temporary wiring configuration resulted in a fire inside containment. The quantity of rework which had been determined to be excessive was not identified as a concern. The total number of items/components reworked in 1990 was low (2.8 percent).

The Inservice Inspection program was effective. Personnel were knowledgeable, well trained, and qualified to perform activities within their respective areas of certification. Licensee management, engineering, and inspection personnel responded effectively to the intergranular stress corrosion cracking identified in the safety injection system accumulators by ensuring that this issue was resolved in a manner that would assure plant safety.

Technical Specifications required surveillances were generally performed in accordance with procedures. One reactor trip was attributed to an operator error during performance of a nuclear instrumentation surveillance test. Two violations involving inadequate procedures to perform tests as specified by Technical Specifications were identified, one of which was a repeat occurrence. In the Inservice Test programs, concerns with pump testing (such as failure to obtain pump bearing temperatures as required), quality and promptness in performing test evaluations, control of test evaluations, and failure to include valves in the program continued to demonstrate weaknesses in this area.

Seven violations were cited.

2. Performance Rating

Category: 2

3. Recommendations

Recognizing the special challenges brought about by aging equipment, continued aggressive efforts in this area are encouraged. A normal level of inspection effort should be maintained.

D. EMERGENCY PREPAREDNESS

1. Analysis

This functional area addresses those activities related to the implementation of the Emergency Plan and procedures, as well as support and training of onsite and offsite emergency response organizations. A total of 195 inspection-hours were expended in this functional area, comprising 4% of the total inspection-hours.

Management support for the emergency preparedness program during the assessment period was satisfactory. However, prior to the June 18, 1990 exercise, management was ineffective in determining and correcting the root cause for the 1989 emergency exercise weakness regarding the inability to augment and activate the Technical Support Center and Operational Support Center in a timely manner. This is further exemplified by the licensee's audit program which also identified staff augmentation as a weakness, but did not result in effective corrective action. This inability to take adequate corrective action was identified as a violation during the 1990 emergency exercise.

An exercise weakness was also identified during the 1990 exercise for failing to appropriately classify a General Emergency from the radiological data. Licensee management was responsive to the identified findings, committing to early corrective action (including an exercise to redemonstrate the effectiveness of the corrective actions) and a meeting with NRC management for discussion of needed improvements. Licensee commitments for corrective actions were met by the end of the assessment period, as indicated by the adequate performance observed during the redemonstration exercise along with favorable observations from a routine inspection.

With the exceptions previously identified, the licensee's performance in the June 1990 exercise was satisfactory. Emergency identification and classification through the Site Area Emergency for this exercise and through General Emergency for the redemonstration exercise were timely and correct. The emergency response organization also demonstrated the ability to mitigate the plant casualties. In the redemonstration exercise, the licensee exhibited effective dose projection and monitoring, and the ability to communicate effectively with state and local authorities. The June 1990 exercise was objectively observed and critiqued by the licensee, and the particularly challenging exercise start time was maintained confidential. Interdepartmental coordination and support was also evident based upon the in-house development and control of a challenging scenario.

Upgrades to the emergency preparedness program included the implementation of a beeper system to correct the inability to activate the emergency response organization in a timely manner. Subsequent augmentation drills and the redemonstration exercise showed that adequate staffing and activation were achievable. Management emphasized the importance of the emergency response function by making it part of the employees' job descriptions.

During this period, the licensee maintained its emergency response facilities in a state of readiness through the performance of periodic tests, maintenance, and inventories. In addition, the licensee was nearing completion of a new Joint Information Center near Darlington, SC at the end of the assessment period.

The licensee has had a history of isolated emergency classification problems which have continued during this assessment period. As discussed previously, a weakness was identified in the 1990 exercise for failure to properly classify a General Emergency. In addition, during the only actual event (toxic gas release) occurring within this period, the licensee initially improperly classified the event as a Notification of Unusual Event. Subsequently, it was reclassified as an Alert since the release was into a vital area, not just the protected area. A violation was identified for this improper classification.

The onsite emergency organization was adequately staffed and was trained in accordance with Plant Emergency Plan Procedures. The licensee also continued to provide effective annual training for offsite authorities including fire, rescue, and law enforcement.

Two violations were cited and one exercise weakness was identified.

2. Performance Rating

Category: 2

3. Recommendations

The licensee should continue to provide attention to root cause analysis and broad corrective actions for problems identified in the emergency preparedness area. One area requiring increased management attention is emergency classification. The normal level of inspection effort is recommended.

E. SECURITY

1. Analysis

This functional area addresses those security activities related to protection of vital plant systems and equipment, and shipment of irradiated fuel. A total of 69 inspection-hours were expended in this functional area, comprising 1% of the total inspection-hours.

Security management at both the site and corporate levels were knowledgeable and highly supportive of program activities. The licensee continued to provide sufficient shift coverage with well qualified security officers. Security shift supervisors were sensitive to regulatory concerns. The licensee's oversight of its security contractor was effective, as evidenced by frequent backshift inspections of the security shifts. The licensee took steps to reduce the turnover rate during the latter part of the assessment period. The security force experienced considerable overtime during the extended refueling outage, with no noticeable decline in operational effectiveness.

Management support was evidenced by thorough corporate audits, responsiveness to safety related issues, and efforts to enhance security program effectiveness. Notable in this regard was the establishment of a corporate security policy in which a member of the corporate security staff visits the site on a monthly basis to review security force performance in a selected program area, the results of which are reported to corporate management. Licensee security initiatives included: procurement of more effective security badge detection equipment to prevent inadvertent removal of security access badges and keys from the protected area; procurement of upgraded X-ray equipment to be installed in the West Access Portal to enhance control of material entering the protected area and increase inprocessing capacity; and initiating renovation of firearms range facilities to provide for eventual installation of tactical training.

The security program continued to be effectively implemented. Security program functions such as access controls, barrier verification, patrols, alarm responses, alarm station operation, control of safeguards information, and weekly testing of security equipment received priority attention. The licensee's corrective actions for inadequate closed circuit television camera assessment capabilities noted in the previous assessment period evaluation were adequate and provided for an acceptable

level of assessment. Following the completion of refueling outage 13, the licensee took action to repair two vital area barriers; thus eliminating two long-term compensatory posts.

Coordination of activities and communication between the licensee's security staff and NRC staff were satisfactory. Two security plan revisions were made during this assessment period and both were consistent with regulatory requirements.

The licensee's preparatory actions for a rail shipment of irradiated spent fuel were noteworthy; a route mock-up was used for training purposes which included communications and shipment checkpoints, and local law enforcement involvement. The fuel shipment was completed in an excellent manner.

No violations were cited.

2. Performance Rating

Category: 1

3. Recommendations

Maintain a reduced level of inspection effort.

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, maintenance, outages, testing and surveillance; and licensed operator training. A total of 198 inspection-hours were expended in this functional area, comprising 4% of the total inspection-hours.

Overall, engineering and technical support has been satisfactory during this assessment period. Performance of the Nuclear Engineering Department (NED) and Technical Support Unit has been satisfactory with good communications and interfacing between these groups. However, these strengths were partially offset by deficiencies in the areas of technical support staffing, qualification of system engineers, and a large backlog of open items.

The NED provides most design engineering support to the plant through modification development and implementation. The high level of NED onsite involvement during modification development and onsite NED oversight during modification implementation were

areas of strength. The Technical Support and onsite NED Units demonstrated sound engineering judgement in the resolution of emergent issues such as safety injection accumulator nozzle cracking, service water pipe thinning, component cooling water heat exchanger tube cracking, steam generator girth weld indications, and containment fire effects on equipment. Strong communications and interfacing were especially evident during resolution of the service water pipe thinning and steam generator girth weld indications. The system engineer's support to Operations during recovery activities associated with an uncoupled control rod was excellent.

The development and validation of design basis documentation (DBD) continued to be effective during this assessment period. The incorporation of DBD information into modification packages was considered a strength. However, a weakness was identified associated with misidentification of containment spray and motor driven auxiliary feedwater containment isolation valves in the Safety Injection and Auxiliary Feedwater System DBDs, respectively. In addition, the licensee's program encompassing plant instruments to meet the intent of Regulatory Guide 1.97 was evaluated during the period. Results indicated that the program was satisfactory; however, some minor concerns were identified. Timely improvements were initiated and successfully completed to yield a strong program in this area.

Management's commitment to Technical Support Unit improvements was demonstrated by issuance of a Technical Support Improvement Plan during the assessment period. Initiatives achieved by the end of the period include: system and component engineer training qualification program development, code of conduct implementation, procedure writer's guide issuance, and technical and procedural guidelines development. This plan also included enhancements in the areas of preventive maintenance and performance monitoring.

Technical support staffing was strained. Staff increases occurred during the assessment period and additional staffing was authorized for 1991. The additional staff was necessary to support new program development, system and component engineer programs, and reduction in the number of backlogged work items. However, average Technical Support personnel overtime continued to remain high during the six month refueling outage; i.e., approximately 25 percent overtime was required to support backshift and weekend coverage and an additional 12 percent of overtime was required for emergent work items.

Limited technical support of routine plant activities was identified in the previous two assessment periods as a weakness. During the assessment period, increased management attention in this area resulted in additional involvement in routine plant activities. However, consistent improvement was not achieved. While examples of good system engineering performance were noted, system engineers did not consistently perform system walkdowns nor consistently provide oversight of significant system maintenance. Training measures were developed to address these weaknesses and include a system and component engineer qualification program and guidelines on how to perform duties such as technical reviews and system walkdowns. Although developed in this assessment period, qualification implementation was not initiated until after the refueling outage completion in March 1991.

A previously identified weakness in the method of prioritizing and tracking items resulted in a large backlog of open items assigned to Technical Support. Elimination of this weakness was an objective of the Technical Support Improvement Plan, the new prioritization system, and the Technical Support Unit Work Management System. These programs were not fully effective in improving management of Technical Support Unit work items. By the end of the assessment period, additional contractor personnel had been assigned to prioritize items and assist in reducing the number of outstanding items. Reduction in the number of items to a level acceptable to the plant staff was not anticipated until late 1992.

Technical and engineering challenges were dominated by activities associated with the extended refueling outage. The licensee accomplished a significant number of plant modifications/upgrades during this outage. These modifications were generally conservative and demonstrated quality engineering and technical support. Examples included: resolution of electrical system issues by hardware improvements such as the modification of the 480 volt DB-50 circuit breakers to upgrade the short circuit fault current capacities; modifications to incorporate an automatic nonessential load shedding feature for motor control centers (MCCs) and the upgrade of cable ampacities in MCCs; resolution of concerns due to rejectable indications on a number of control rod guide tube support pins by a decision to replace all 106 support pins with new pins which have a higher resistance to intergranular stress corrosion cracking; and dedication of significant resources in engineering and technical support to resolve the electrical system single failure vulnerability issue.

Management's attention was focused on the training department due to the failure of five of ten candidates for an initial license examination in December 1989, and the requalification examination results at another CP&L facility in 1990. The licensee's successful efforts to improve performance were demonstrated by excellent examination results during this assessment period. Operator preparation and training were intensified and consultants were utilized to assess training program adequacy and operator exam readiness. All applicants passed the initial examinations administered to two reactor operator (RO) and eight senior reactor operator (SRO) candidates during this assessment period. Five of those were retakes of previous failures.

The Requalification Program was demonstrated to be satisfactory, as evidenced by a 96 percent pass rate (23 of 24) for requalification examinations administered in March 1991 to 12 ROs and 12 SROs. Strengths were identified during the above examinations in the areas of emergency operating procedure (EOP) usage and communications between crew members during simulator examinations. Examination material quality was good and simulator scenarios were excellent in detail and depth of EOP usage. Facility evaluator performance was generally good and simulator crew performance for EOPs was very good. However, some weaknesses were identified in initiation of Critical Safety Function monitoring, proper use of Annunciator Alarm Procedures, and inconsistent implementation of Abnormal Operating Procedures.

Two violations were cited.

2. Performance Rating

Category: 2

3. Recommendations

Increased management attention should be focused on the staffing level of the Technical Support Unit. A high priority should be placed on implementation of the Technical Support Improvement Plan and on accomplishing training of the system and component engineers. A normal level of inspection effort should be maintained.

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. A total of 1242 inspection-hours were expended in this functional area, comprising 26% of the total inspection-hours.

Licensee management has continued to be actively involved in monitoring and assessing plant performance and operations. Management's visibility in the plant increased in the latter portion of the assessment period, with routine weekly materiel condition inspections and scheduled containment tours during the outage. However, these efforts were not initiated until a concern was raised regarding management presence in the plant as discussed in section IV.A. Unit managers were utilized as start-up managers during the return to power operation subsequent to refueling outage 13. The start-up managers were effectively utilized to coordinate plant activities and minimize unnecessary distractions to the plant operators. Management involvement in safety was also demonstrated through the minimization of shutdown risks during the refueling outage as discussed in section IV.A.

The licensee's performance of oversight functions continued to be adequate with appropriate management involvement in safety decisions. The Plant Nuclear Safety Committee routinely disposed of safety issues in a technically sound and conservative manner. This was demonstrated through the evaluation and disposition of degraded source range nuclear instrumentation, service water system piping degradation, and steam generator indications. As discussed in section IV.F., effective management oversight was evident in the actions to address operator licensing concerns. However, oversight was not effective in precluding recurrence of concerns with surveillance test performance and emergency response organization augmentation and activation (see sections IV.C. and D., respectively).

The timeliness of independent reviews performed by the Corporate Nuclear Safety (CNS) section improved from the last assessment period, with a significant reduction in the backlog of items requiring review. The Onsite Nuclear Safety (ONS) group continued to be effective in its performance of special investigations into technical concerns and events. The Operating Experience Feedback (OEF) system was also effectively utilized through the conduct of Focus on Nuclear Safety Meetings prior to the transformer outage and prior to plant start-up from refueling outage 13. Additionally, dissemination of OEF reminders which had applicability to scheduled outage evolutions, demonstrated a proactive effort to prevent

occurrence of industry events at H. B. Robinson. These efforts are indicative of improvement in proactive oversight since the last assessment period.

Other oversight functions and programs (i.e., Quality Assurance (QA)/Quality Control (QC) and corrective actions programs) did not demonstrate consistent results. Concerns were identified with the QA/QC function, in that initial required QA/QC reviews of work requests were not being performed. Additionally, the site corrective action programs were not consistently applied. The degree of management attention that identified issues received and the threshold for issue identification and categorization were not uniform among corrective action programs. The corrective action programs were revised to provide a centralized site-wide system which would perform root cause analysis where warranted and receive consistent management attention. The root cause analysis performed on improper safety injection pump thrust bearing installation was comprehensive and timely, exhibiting improvement over the previous corrective action programs' nonformalized root cause analysis process. Management was not effective in implementing formalized/proceduralized corrective action trend analysis nor in fully developing the maintenance repetitive failure program. However, the use of non-formalized Adverse Trend Meetings successfully identified problems such as inadequate radiological postings and poor construction work practices.

Effective January 1, 1991, the QA Department, CNS, and ONS functions were transferred to the newly established Nuclear Assessment Department. The key positions of Section Manager, Onsite Assessment and Engineering/Technical Support Focus Manager were not filled at the end of the assessment period.

Licensee Event Report (LER) quality was considered acceptable and covered all major aspects of each event; valuable supplemental information was provided as needed. Weaknesses noted in LER quality during the previous assessment period were corrected. The licensee's program for reporting defects and non-compliances, as required by 10 CFR 21, was adequate. The licensee conservatively issued a part 21 notice on potential concerns with safety injection accumulator weld metals, even though the supplier did not believe a notice was warranted.

Improvements were made in the procedure for performing safety evaluations required by 10 CFR 50.59. This procedure was established under the guidelines of Nuclear Safety Analysis Center (NSAC)-125, an industry standard for 10 CFR 50.59 reviews. Distinctive improvements in safety review quality and

thoroughness were observed following the procedure's implementation in June 1990. A critical and noteworthy element of this new process is the line-item requirement to address the design basis in safety review packages.

Responses to NRC Bulletins, Generic Letters and other generic communications were timely and met regulatory requirements. Reflecting the significant number of modifications and other activities, the number of Technical Specification (TS) changes, relief requests, and exemptions increased during this rating period. These licensing activities include a significant number of actions related to the improvements of the on-site electrical systems. During this assessment period, all the electrical system issues raised during the 1987 safety system functional inspection were resolved. In general, the quality of the submittals was satisfactory, exhibiting improvement in both quality and completeness since the last assessment period. The licensee was responsive to staff questions during the review of these applications. However, in the case of the request to change the TS related to the radiation monitoring system, the emergency and exigent TS amendment requests could have been avoided through better planning. In addition, the upper range of the plant vent radiation monitor had to be corrected subsequent to the issue being raised by the staff during review. Initially, the licensee did not appear to have full knowledge of the licensing requirements and design basis of the plant vent monitor.

One violation was cited.

2. Performance Rating

Category: 2

3. Recommendations

A normal level of inspection effort should be maintained.

V. SUPPORTING DATA

A. Licensee Activities

Beginning and ending the assessment period at full power, the unit operated with an availability factor of 56.4 percent. During this period the unit experienced two reactor trips (discussed in section V.F.) and three outage related shutdowns, one of which commenced refueling outage 13. On May 4, 1990, the unit was removed from service for ten days to upgrade the main and auxiliary transformers.

With the exception of a trip initiated three-day recovery period to make repairs to a failed main feedwater regulating valve, the unit operated until it was removed from service on June 16, 1990, to replace all three main feedwater regulating valve gaskets. The unit resumed operation on June 18, 1990, and conducted normal power operations until refueling outage 13, which began on September 8, 1990 and ended on March 9, 1991. Primarily due to emergent work, this 99-day scheduled outage lasted 183 days. Emergent work encountered included: uncoupled control rod recovery; control rod guide tube support pin replacements; reactor coolant pump seal work; and containment fire recovery.

At the start of the refueling outage the former Operations Manager was promoted to Plant General Manager. A Technical Support engineering supervisor, licensed as a senior reactor operator, was promoted to the Operations Manager position. In the last month of the assessment period the Environmental and Radiation Control Manager was replaced by the Nuclear Services Department Principal Specialist - Health Physics.

B. Direct Inspection and Review Activities

During the assessment period, 38 routine and two special inspections were performed at H. B. Robinson by the NRC staff. The special inspections were:

- April 16-20, 1990; Regulatory Guide 1.97 Review
- May - June 1990; Maintenance Team Inspection

C. Escalated Enforcement Actions

1. Orders

None

2. Civil Penalties

None

D. Management Conferences

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

- March 30, 1990; Management Meeting to Discuss SALP Board Assessment
- August 16, 1990; Management Meeting to Discuss Emergency Preparedness at all three CP&L sites

- November 27, 1990; Management Meeting to Discuss Robinson Activities, Improvements, and Future Plans

- January 3, 1991; Management Meeting to Discuss CP&L's Nuclear Assessment Program

E. Confirmation of Action Letters

None

F. Reactor Trips

The unit experienced two automatic reactor trips which are listed below:

- January 17, 1990; The unit tripped from 100 percent power when an operator inappropriately tripped two bistables during a nuclear instrumentation surveillance test. The unit was restarted the next day.

- May 17, 1990; The unit tripped from 100 percent power on low steam generator level as a result of the B main feedwater regulating valve disc separating from the stem. The unit was returned to service after 87 hours.

G. Review of Licensee Event Reports (LERs)

During the assessment period a total of 16 LERs were analyzed. The distribution of these events by cause, as determined by the NRC staff, was as follows:

Cause	
Component Failure	3
Design	5
Construction, Fabrication, or Installation	2
Personnel	
- Operating Activity	2
- Maintenance Activity	0
- Test/Calibration Activity	2
- Other	0
Other	2
Total	16

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.

Note 3: Two additional LERs were voluntary and not considered in this report.

H. Licensing Activities

During the assessment period the staff completed 31 licensing activities. This included the issuance of 10 Technical Specification amendments; the granting of two relief requests; completion of five (non-amendment) safety evaluations; and review of six generic letters, three bulletins, and three Multi-Plant Actions.

I. Enforcement Activity

FUNCTIONAL AREA	NO. OF DEVIATIONS AND VIOLATIONS IN EACH SEVERITY LEVEL					
	Dev.	V	IV	III	II	I
Plant Operations						
Radiological Controls						
Maintenance Surveillance			7			
Emergency Preparedness			2			
Security						
Engineering/Technical Support			2			
Safety Assessment/Quality Verification			1			
TOTAL			12			