APPENDIX A

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-498/94-22
50-499/94-22

Licenses: NPF-76
NPF-80

Licensee: Houston Lighting & Power Company
P.O. Box 1700
Houston, Texas

Facility Name: South Texas Project Electric Generating Station, Units 1 and 2

Inspection At: Matagorda County, Texas

Inspection Conducted: May 23-27, 1994

Inspectors: S. L. McCrory, Examiner/Inspector, Operations Branch, Division of Reactor Safety

T. O. McKernon, Examiner/Inspector, Operations Branch, Division of Reactor Safety

J. I. Tapia, Examiner/Inspector, Operations Branch, Division of Reactor Safety

Accompanying Personnel: J. Lynch, SEA Inc. (Contractor)

Approved: John Pellet
J. L. Pellet, Chief, Operations Branch

6/13/94
Date

Inspection Summary

Areas Inspected (Units 1 and 2): Non-routine, announced inspection of the training programs for non-licensed reactor plant operators and instrument and control technicians. The inspectors used NUREG-1220, "Training Review Criteria and Procedures," Revision 1, as described in Inspection Procedure 41500, "Training and Qualification Effectiveness," to evaluate the licensee's implementation of a systems approach to training in these programs.

Results (Units 1 and 2):

Plant Operations

- The communications and working interface between the operations department and the nuclear training department had improved significantly over those previously observed. Operations had accepted greater responsibility for developing and assuring the success of the training programs affecting its personnel (Section 1.1).

- The inspectors evaluated the communication structure and operations department "ownership" of its training programs as programmatic strengths (Section 1.1).

Maintenance

- Maintenance training had been significantly strengthened by standardization of formal training procedures. While there was some uncertainty among I&C technicians regarding overall training goals, there was enthusiastic support for the quantity and quality of training (Section 1.2).

- The process for specialized certifications of technicians was weak. In some cases the interval between formal training and pending certification was as long as two years that may have required retraining to permit final certification (Section 1.2).

- Observed training and in-plant activities indicated the need for additional management oversight of maintenance training and activities, as evidenced by soldering techniques training inconsistent with procedure guidelines (Section 1.2.1), an incomplete prejob briefing when replacing a waste gas flowmeter, and manually passing leads through an energized cabinet during an accumulator surveillance (Section 1.3).

Management Overview

- Management support of and commitment to training were strong at all levels and were consistent among both plant and training departments (All Sections).

Summary of Inspection Findings:

- Inspection Followup Item 498/9349-24; 499/9349-24 was closed. (Section 2.1)

Attachments:

- Attachment 1 - Persons Contacted and Exit Meeting
- Attachment 2 - List of Documents Reviewed

DETAILS

1 TRAINING PROGRAMS (41500)

The inspectors reviewed the training programs for non-licensed reactor plant operators (RPOs) and instrument and control (I&C) technicians. The inspectors determined if personnel had been trained and qualified commensurate with the performance requirements of their jobs and evaluated the effectiveness of the implementation of the systems approach to training. This program review included: evaluation of the methods of licensee training and qualification by observation of classroom and on-the-job activities; interviews with trainers, operators, technicians, and supervisors; review of selected procedures, training materials, self-assessments, and corrective actions; and observations of field activities.

1.1 Program Requirements

Since the specific programs reviewed had been accredited by the National Nuclear Accrediting Board, the inspectors accepted that they met the minimum requirements to satisfy a systems approach to training. Therefore, the inspectors focused on programmatic changes that had been implemented over the last 18 months. The significant changes included:

- Standardization of procedures applicable to formal training administered by the nuclear training department and
- Creation of the Executive Training Review Board, the Technical Advisory Committees, and the Curriculum Review Committees.

Before the autumn of 1993, many of the procedures governing formal training of plant personnel by the nuclear training department were developed and maintained within each department or major functional area. Additionally, there were overlapping procedures maintained by the nuclear training department. Between the autumn of 1993 and the spring of 1994, all procedures governing formal training by the nuclear training department were converted from department procedures into the station procedure Series OPGP03-ZA/ZT. The inspectors determined that, beyond having reduced the administrative burden of maintaining many procedures with duplicate requirements, the conversion of department training procedures to station procedures introduced a higher level of consistency in the quality of training.

The creation of the review board and various committees provided a framework for improved interaction among the plant functional areas (operations, maintenance, etc.), their respective support groups, and the nuclear training department. The inspectors attended a curriculum review committee (CRC) meeting that was both systematic and dynamic regarding training issues and program adjustments. The CRC discussed station problem reports, training program design, program evaluation, training requests, and training program-related audits and assessments. Further, the CRC discussed action items,

training feedback items, and other business that might affect training. The inspectors reviewed the minutes from several prior board and committee meetings. Those reviews further confirmed inspectors' evaluation that communications between the nuclear training department and the various plant departments was vigorous and more effective than had been previously observed.

Other changes and improvements that had been implemented or were being implemented included:

- Acceleration of formal training for RPO apprentices,
- A rotational team concept for I&C technicians,
- Expanded scope of RPO continuing training, and
- Integrated training of RPOs with control room operators.

During interviews, operators and technicians conveyed enthusiasm for the changes that had been made and those planned. RPOs were particularly supportive of the increased amount of training they were receiving and of the integrated training activities. Many expressed a belief that operator feedback had played a significant role in many of the improvements. I&C technicians were similarly supportive of recent and on-going changes in their training program. However, they expressed some confusion regarding the methods and goals of the rotating team concept. Management acknowledged a need to revisit that area with the technicians, but also pointed out that many aspects of the program were still evolving.

In other interviews, supervisors and managers expressed strong commitments to training programs and activities. They were encouraged also by the number of recent improvements. Moreover, supervisors and managers expressed a greater sense of ownership of their respective programs as a result of improvements in the overall training program structure. They acknowledged that the board and various committees had significantly improved communications between the plant departments and training. They were quick also to point out the amount of additional on-going communication. Most indicated that they had significant communication with the training department at least weekly.

1.2 Implementation

1.2.1 Initial Training

The inspectors reviewed the lesson plans and related training material for the following training activities:

- RPO training on the steam generator water level control and auxiliary feedwater systems.

- On-the-Job training of surveillance of the containment hydrogen analyzer

- Laboratory training - basic soldering for I&C technicians.

The lesson plans and related training material incorporated the appropriate elements of a systems approach to training and were good quality. The inspectors also observed the conduct of the above training activities. The training was competent and professional. Trainee interest and participation were high.

During the laboratory training on basic soldering, an inspector noted an inconsistency between the instruction and procedural guidelines for a particular soldering task. When soldering to "tin" leads or to make a connection, the students were instructed initially to make a small solder bridge between the soldering iron and the wire/termination. This was to improve heat transfer from the iron to the work. It was accomplished by briefly touching the solder to the iron tip and wire/termination at the point they touched. The plant procedure for soldering, OPMP07-ZJ-0001, did not include this "bridging" step. Instead, it directed that solder be applied only to the lead wire and terminal and that the iron not be touched with the solder. The instructor stated that the plant soldering procedure did not preclude the accomplishment of the bridging step. However, the instructor did not provide any evidence that the work practice being taught had management endorsement. The inspectors identified the inconsistency to line supervision for further evaluation as appropriate.

While reviewing I&C training records, the inspectors found that some I&C technicians that had prior classroom training had not been certified on the specific tasks for a long time following classroom training. In some instances, this lag time was about 2 years. The inspectors reviewed the training department performance indicators for training and certification. The inspectors determined that while improvements had been made during the past year, the timeliness of certification following training was still an issue requiring management attention. The inspectors noted that the same issue had been brought to training management attention by self assessments and third party training audits. The inspectors advised licensee management that the issue was considered a training weakness. That was due to the potential need to retrain individuals following long periods between training and certification.

1.2.2 Continuing Training

An inspector observed a session of continuing training for RPOs. The training involved implementation of the Emergency Plan utilizing the simulator. The entire operating crew responded to a scenario designed to exercise the Emergency Plan. The head reactor plant operator and 4 RPOs practiced making state and local official notifications. The RPOs were knowledgeable and proficient regarding their duties for off-site communications following emergency plan activation. RPOs and control room operators regarded this type of integrated training as very beneficial. The inspector reviewed the lesson plans and training attendance records for training RPOs on offsite notifications and for training licensed operators in emergency classifications. The lesson plans and attendance were satisfactory.

1.3 In-Plant Activities

The inspectors observed the following activities in the plant to assess the adequacy of RPO and I&C training programs as translated into work practices.

- Activities incident to the replacement of a waste gas flowmeter transmitter;
- Calibration of the ATWAS mitigation system actuation circuitry, AMSAC;
- Surveillance on Accumulator B Level Group 4;
- Implementation of an Equipment Clearance Order to remove Unit 1 Spent Fuel Pool Cooling Train B from service; and
- Conduct of Mechanical Auxiliary Building watch rounds.

Additionally, the inspectors reviewed qualification records and documentation related to the specific task observed.

The operators and technicians were qualified, knowledgeable, and generally conscientious in performing their tasks. The inspectors observed some work practice and human factors deficiencies that were communicated to licensee supervision for their consideration and evaluation.

An inspector observed the prejob briefing, associated with the replacement of a waste gas flowmeter transmitter (Service Request WG-2-175472), conducted by the first line supervisor. While the briefing was sufficiently detailed regarding the performance of the task, the supervisor did not assess whether the technicians had pre-staged the necessary equipment and verified that plant activities would permit the work to be started. As a result, materials were not pre-staged and a conflict existed with chemical operations that precluded preforming the task as originally scheduled. Furthermore, the inspector determined that the technicians were not familiar with the measuring and test equipment required for the task. They had to seek the assistance of another technician who had used the equipment on other tasks.

During the surveillance activity on Accumulator B Level Group 4 according to procedure OPSP02-SI-0952, an inspector observed technicians passing test equipment leads through an energized cabinet. Installed instrumentation and temporarily installed test equipment had to be simultaneously visible for effective conduct of the surveillance. However, the connections for the test equipment were on the opposite side of the cabinet from the installed instrumentation. Because the cabinet was in a long row of cabinets with no overhead clearance, the leads were manually passed through the internals of the energized cabinet. On one occasion, one end of a test lead was dropped into the energized cabinet while passing it through. This had the potential for shorting or grounding a circuit with the possibility of generating an unwanted signal or introducing damage. The inspector communicated his concern

about both the work practice and the human factors engineering to licensee management.

1.4 The Feedback Process

The inspectors reviewed "Implementation of Training Programs," OPGP03-ZA-0123, Revision 1 and feedback records and interviewed several operators, technicians, instructors, and supervisors to assess the effectiveness of the feedback process. The inspectors determined that the feedback process had improved significantly during the past year. The Curriculum Review Committee was the focal point for addressing and responding to feedback submitted through the formal process. The feedback was evaluated for its impact on exiting training and for new training requirements. During the meeting, individuals or groups were assigned responsibility to respond to specific feedback items. Those assignments were recorded and tracked on an action item list published as part of the committee meeting minutes. The inspectors also determined that a significant amount of feedback was being communicated through informal processes. Those informal processes did not assure that the items were captured and tracked as part of the formal feedback process. While the inspectors found no evidence that feedback via informal channels was being neglected, they cautioned licensee staff to be sensitive to reliance on informal processes.

1.5 Self Assessment

The inspectors reviewed several licensee audits and self assessments of training programs. The audits and assessments were generally thorough and comprehensive. They made appropriate recommendations, many of which contributed to recent improvements. Virtually all the independent findings of the inspectors had been previously identified in one manner or another in the licensee's audits and self assessments. However, the inspectors determined, that over the previous 18 months, audit and assessment activities focusing on RPO training programs were significantly less intense than those focusing on licensed operator and maintenance programs. The inspectors found no specific evidence that those audits or assessments had been inadequate. However, they cautioned the licensee staff to be sensitive to assuring that reduced focus audits or assessments remained adequate to evaluate accurately program status.

2 FOLLOWUP (92701)

2.1 (Closed) Inspection Followup Item 498; 499/9349-24: Various Training Deficiencies

From October 12, 1993, through March 18, 1994, (while responding to the diagnostic evaluation team inspection findings of June 10, 1993) inspectors identified the following training deficiencies. Training for reactor coolant pump motors was not complete. Training on standby diesel generators did not include the governor or voltage regulator. Instrumentation and control technicians assigned to work on the security system were not trained on certain aspects of that system.

During this inspection, an inspector verified that lesson plans had been developed for the reactor coolant pumps to include training on the pump motors. Further, training lessons plans for the standby diesel generators had been revised to include training on the governor and voltage regulator (reference Lesson Plans EMT954.01, QCC OJT-MNT-495; EMT 909; EMT-960; EMT-961; and QCC-OJT-MNT-512, respectively). In addition, the nuclear security department planned to take full responsibility for security I&C training effective June 1, 1994. Security I&C technicians were scheduled to attend vendor training on the upgraded security video camera system in July 1994. The security department had begun an upgrade of the security systems. Full operation was scheduled for December 1997 with training on the new systems scheduled during that period. Training of the security I&C technicians was the first phase of the training in the upgrade program.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

W. Aimone, Lead Instructor, RPO
J. Bartlett, Operations Training
*M. Berg, Director, ISEC
J. Brown, Technician, I&C
*J. Calvert, Supervisor, Non-licensed Operator Training
*J. Carlin, Training Manager
T. Cloninger, Vice President, Nuclear Engineering
*K. Coates, Manager Maintenance, Unit 2
*W. Cottle, Group Vice President, Nuclear
N. Cuervenka, Technician, I&C
W. Dowdy, Manager, Plant Operations, Unit 2
R. Englmeier, Manager, Nuclear Safety and Quality Control
*R. Fast, Manager Maintenance, Unit 1
*R. Ferguson, Licensing Engineer
*J. Johnson, Acting Quality Assurance Director
M. Joiner, Lead Instructor, I&C
T. Jordan, Manager, Systems Engineering Department
*A. Kent, Manager, Mechanical Fluid Systems
J. Ledgerwood, Manager I&C, Unit 2
*L. Martin, General Manager, Nuclear Assurance
*L. Myers, Plant Manager, Unit 1
*M. Pacy, Manager, Engineering Programs
R. Pell, Manager, Chemistry Operations
*K. Poling, Operations Training Division Manager
R. Reynolds, Manager I&C, Unit 1
*D. Sanchez, Accreditation Program Manager
D. Schulker, Supervisor, Training, Operations Support
J. Sheppard, General Manager, Nuclear Licensing
*K. Taplett, Senior Staff Consultant, Licensing
S. Tucker, Instructor, I&C
T. Underwood, Manager, Operations Support
D. Valley, Quality Assurance
W. Waddell, Manager, Maintenance Support

1.2 NRC Personnel

*D. Loveless
*J. Lynch
*S. McCrory
*T. McKernon
*J. Tapia

*Denotes personnel that attended the exit meeting. In addition to the personnel listed above, the inspectors contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on May 27, 1994. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee acknowledged the inspection findings documented in this report. The licensee did not identify as proprietary any information provided to, or reviewed by the inspectors.

ATTACHMENT 2

1 DOCUMENTS REVIEWED

- I&C Training Program, OPGP-03-ZT-0143, Rev 0
- Containment H2 Analyzer Surveillance Procedure, OPSP02-CM-4102A
- Accumulator B Level Group 4 Surveillance Procedure, OPSP02-S1-0952
- Nuclear Training Program Policy NPG-190 Rev. 2
- Management Oversight of Training Programs, OPGP03-ZA-0119, Rev 0
- Analysis of Training Programs, OPGP03-ZA-0120, Rev 0
- Design of Training Programs, OPGP03-ZA-0121 Rev 1
- Development of Training Programs, OPGP03-ZA-0122, Rev 0
- Implementation of Training Programs, OPGP03-ZA-0123 Rev 1
- Evaluation of Training Programs, OPGP03-ZA-0124, Rev 0
- Training Exemption Requests, OPGP03-ZA-0125, Rev 0
- Instructor Training Programs, OPGP03-ZT-0130, Rev 0
- Contractor Training Program, OPGP03-ZT-0138, Rev 0
- RPO Training and Qualification Program, OPGP03-ZT-0143, Rev 0
- STPEGS Ludwig/Parkey/Myers Memorandum of October 22, 1993 titled "Standards of Conduct for Training."
- South Texas Project 1994-1998 Business Plan
- Accreditation Evaluation Report South Texas Project Electric Generating Station Houston Lighting & Power Company, Review conducted November 8-12, 1993.
- HL&P Mallen Memorandum dated March 23, 1994, titled "Independent Assessment of Operations and Engineering Support Personnel (ESP) Training Programs
- Records Management, OPGP07-ZA-0001
- Document Control, OPGP07-ZA-0002
- Training Records Documentation System, OPGP07-ZA-0003

- Qualification and Certification of Maintenance Personnel, OPMP01-ZA-0035 Draft Rev. 1
- Task-to-Training Matrix, I&C, March 17, 1994
- Basic Soldering Qualification, OJT-MNT-7450
- Memorandum Maint. 94-2-0005 dated January 10, 1994, titled "Transmitter Calibration Standard," and addressed to all I&C Personnel.