APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-498/90-32
50-499/90-32

Operating Licenses: NPF-76
NPF-80

Dockets: 50-498
50-499

Licensee: Houston Lighting & Power Company (HL&P)
P.O. Box 1700
Houston, Texas 77251

Facility Name: South Texas Project (STP), Units 1 and 2

Inspection At: STP, Matagorda County, Texas

Inspection Conducted: November 26-30, 1990

Inspectors: C. E. Johnson, Reactor Inspector, Plant Systems Section, Division of Reactor Safety — Date 12-21-90

M. Runyan, Reactor Inspector, Plant Systems Section, Division of Reactor Safety — Date 12-21-90

Approved: J. F. Stetka, Chief, Plant Systems Section, Division of Reactor Safety — Date 12/21/90

Inspection Summary

Inspection Conducted November 26-30, 1990 (Report 50-498/90-32, 50-499/90-32)

Areas Inspected: Routine, announced inspection of the licensee's plant modification program and previously identified inspection findings.

Results: Within the areas inspected, no violations or deviations were identified.

The inspectors found that design changes and modifications were being properly implemented. Management attention was evident and effective in this area. A review of audit reports generated by the quality assurance organizations indicated that management was aggressive and responsive in responding to the findings.

DETAILS

1. PERSONS CONTACTED

1.1 LICENSEE PERSONNEL

T. Asbury, Systems Engineer
*B. Auguillard, Senior Development Analyst
*C. Ayala, Supervising Engineer, Licensing
*D. Bednarezyk, Consulting Engineer
*J. Beers, Modification Supervisor, Design Engineering
*M. Chakravorty, Director, NSRB
*D. Chamberlain, Group Supervisor, Design Engineering
M. Chambers, Systems Engineer
*D. Denver, Manager, Plant Engineering
*R. Estes, Senior Consultant
*A. Harrison, Supervising Engineer, Licensing
*W. Humble, Supervisor, Section VI, Plant Engineering
J. Johnson, Supervisor, Engineering Assurance
*T. Jordan, General Manager, Nuclear Assurance
*A. Khosla, Licensing Engineer
*S. Lauberto, Supervisor, Consulting Engineer
*D. Leazar, Programs Manager, Plant Engineering
R. Martin, System Engineer
*M. McBurnett, Manager, Nuclear Licensing
*D. McCallan, Support Manager, Plant Operations
*A. McIntyre, Manager, Design Engineering
B. Mukherii, System Engineer
*M. Munoz, Record Specialist
D. Musick, Supervisor, NSSS
*H. Ray, Licensing Engineer
*D. Rhodes, Supervisor, Records Management
*S. Rosen, Vice President, Nuclear Assurance
*D. Sanchez, Manager, Maintenance Planning
*M. Wisenburg, Plant Manager

1.2 NRC PERSONNEL

*R. Evans, Resident Inspector
*D. Kelley, Reactor Inspector, Test Programs, Region IV (RIV)
*W. Seidle, Chief, Test Programs Section, RIV
*A. Singh, Reactor Inspector, Test Programs, RIV
*T. Stetka, Chief, Plant Systems Section, RIV

*Indicates those persons who attended the exit meeting conducted on November 30, 1990.

The inspectors also contacted and interviewed other licensee personnel during the course of this inspection.

2. FOLLOWUP ON PREVIOUSLY IDENTIFIED FINDING (92701)

(Open) Followup Item (498/8934-01; 499/8934-01): This item pertained to an additional review of the results of the licensee's temperature survey of the containment when temperature sensitive tapes had been collected and the results analyzed and documented.

The licensee informed the inspectors that Procedure 1TEP07-XC-0001, "Reactor Containment Building Temperature Survey," provided for placing approximately 35 temperature sensitive tapes at selected locations throughout the Unit 1 containment. This procedure was implemented in the previous refueling cycle for Unit 1. Review of this item by the inspectors indicated that the results of the containment temperature survey performed between September 1989 and April 1990 using Procedure 1TEP07-XC-0001 have been obtained. However, because this survey did not cover the summer months, the licensee has extended work on this until June 17, 1991. A similar program for monitoring the Unit 2 containment temperature had not been completed. This item remains open.

(Closed) Followup Item 498/88-72-03; 499/88-72-03: This item pertains to labeling discrepancies identified in NRC Inspection Report 88-72.

Review of this issue indicates that the licensee is tracking commitments made in their letter ST-HL-AE-2873, dated November 23, 1988, and will complete this item when the Procedures Upgrade Program is completed. The estimated completion date is December 21, 1993. Based on the inspector's review of the licensee's status of this item and the licensee's tracking of this commitment, this item will be closed.

(Closed) Followup Item 498/88-72-04; 499/88-72-04: This item pertains to a conflict between site procedures and a writer's guide. Review of this issue by the inspectors also indicates that this issue is being tracked by HL&P letter ST-HL-AE-2873, dated November 23, 1988, and will be completed when the Procedures Upgrade Program is complete on December 31, 1993.

Based on the inspector's review of the licensee's status of this item and the licensee's tracking of this commitment, this item will be closed.

3. FACILITY MODIFICATIONS (37701)

The purpose of this inspection was to determine if facility modifications that require prior review and approval from the NRC pursuant to 10 CFR 50.59 are completed in conformance with requirements in the facility license, Technical Specifications (TS), and applicable codes and standards to which the facility was built.

The inspectors reviewed the licensee's tracking system which listed plant modifications implemented at the site. Four modifications were selected for review. These modifications were evaluated to ensure that the changes made were in conformance with the applicable requirements.

3.1 Modification Package 89 T0068, "Radiation Monitors"

This modification pertained to three pairs of radiation monitors that provide actuation functions for (1) Control Room/Electrical Auxiliary Building ventilation, and (2) Spent Fuel Pool and Reactor Containment Building purge. Each pair of monitors were currently connected such that high radiation or monitor failure of either monitor in the pair would cause ESF actuation for the respective HVAC equipment. In each case of monitor failure for either the control room or the spent fuel pool monitors, Technical Specification 3.3-3 requires that the purge valves be maintained closed. If the purge valves are open when monitor failure occurs, these valves are to be expeditiously closed.

The design change was to modify the logic so that a monitor failure will be annunicated in the control room and only a high radiation signal will cause a HVAC ESF actuation.

The insoectors reviewed the modification package and all associated work request documents which indicated that the work had been reviewed, approved and completed. Review of this work package indicated that the post-modification testing of the monitors was acceptable. The inspectors also observed the changes made to the control room panel No. 5Z341CP022 and identified no discrepancies.

3.2 Modification 89-004, "Fuel Handling Building (FHB) Exhaust System Filter"

This modification consisted of rewiring the 50 kilowatt (KW) Fuel Handling Building (FHB) exhaust filter heaters such that the capacity of the heaters is reduced to 38 KW. The modification provides for heater operation in the FHB exhaust system filter units during safety injection actuation (SI) or high radiation signal initiation in the system.

Originally, a flow switch provided in each filter unit automatically turned off the heating element to prevent damage to the element when the air flow rate dropped during simultaneous operation of both trains.

The FHB exhaust air heating, ventilation, and air conditioning (HVAC) subsystems exhaust air from the interior of the FHB to the plant main vent stack. This subsystem is designed as safety-related and seismic Category I and consists of two 100 percent capacity exhaust filter trains, three 50 percent capacity exhaust booster fans, and three 50 percent capacity main exhaust fans. The system design exhaust airflow capacity is 29,000 $\pm$ 10 percent cubic feet per minute (CFM).

Each redundant exhaust filter train consists of three 33 1/3 percent capacity filter units. Each filter unit contains an electric heating element, prefilters, high efficiency particulate air filters, and carbon absorbers. The electric heating elements are provided to decrease the relative humidity of the incoming air, since the efficiency of iodine removal by the charcoal absorbers is adversely affected by high humidity in the air stream.

A flow switch located downstream of each exhaust filter unit automatically turns off the heating element to prevent damage to the element when air flow rate drops below a minimum flow value. Originally, the minimum flow setpoint was 9330 CFM. When all three trains are actuated, the exhaust flow is split between the six operating filter units (two filter trains, each composed of three filter units). Therefore, the flow through each unit is 4833 CFM (29,000 CFM divided by 6). Since this flow is less than the setpoint, the flow switch prevented the heater from energizing.

Rewiring of the 50 KW FHB filter heaters to a reduced capacity of 38 KW and lowering the flow setpoint from 9330 CFM to 3980 CFM for the exhaust air system corrected the deficiency.

The inspectors reviewed the work request package (MWR) and determined that the heaters had been rewired and the flow switches properly recalibrated.

3.3 ECNP No. 89-J-0074, "Toxic Gas Analyzer Actuation Logic"

This modification was prepared to reduce the number of spurious control room HVAC actuations caused by the previous design in which the HVAC actuations occurred when either of the two analyzers had a failure (i.e., loss of power or malfunction) due to a one-out-of-two logic scheme. This modification provides actuation signals based on a two-out-of-two logic instead of a one-out-of-two logic.

The inspectors reviewed all associated work requests and determined that work and functional testing had been completed satisfactorily.

3.4 Modification 89-C-63, "Installation of High Density Spent Fuel Racks"

The scope of this modification was to address facility design changes required to support the installation of high density spent fuel racks in Unit 1. This modification was limited to only those changes required to eliminate physical interference with the new fuel racks. The fuel rack interferences included sparger piping, the burnable poison rod assembly (BPRA) handling tool, and existing fuel rack support plates.

The modification consisted of (1) removing sections of sparger pipe (2) relocating the BPRA handling tool and providing required seismic clearance to the pool liner, (3) eliminating existing spent fuel rack support pads and replacing with filler plate to allow free standing fuel rack installation, and (4) removing and modifying sparger pipe supports to accommodate piping modifications.

The inspectors reviewed all associated work packages related to this modification and found no deficiencies. Review of the Bill of Materials indicated that material used was as specified by codes and standards.

The inspectors concluded that the modifications which required prior review and approval from the NRC were completed in conformance with requirements in the

facility license, and applicable codes and standards to which the plant was built.

4. DESIGN CHANGES AND MODIFICATIONS (37700, 37702, and 37828)

The purpose of this inspection was to verify that the design changes and modifications which were determined by the licensee to not require approval by the NRC were completed in conformance with the requirements of the Technical Specifications (TS), 10 CFR 50.59, 10 CFR 50, Appendix B, and the licensee's QA program. The inspection also verified that the licensee was implementing a QA program for the control of design changes and modifications.

4.1 Procedure Review

The inspectors reviewed the licensee's procedures for the control of design changes and modifications to ensure that the development, installation and verification of modifications were acceptable. Procedures reviewed by the inspectors were adequate and contained sufficient instructions. Procedures reviewed are listed in the Attachment to this report.

The inspectors reviewed modification design packages and associated work control packages for the following modifications.

4.2 Engineering Change Notice Package (ECNP) 89-M-0312

This modification installed seal welds on the bonnet vent plug and body drain plug on each of the four feedwater isolation valves (FWIVs) in Unit 2. Leaks had been detected on these plugs during plant operations. The inspectors reviewed design and work control documents and examined completed field welds. Based on this review, the inspectors concluded that the design and installation of this modification were satisfactory.

4.3 ECNP 89-S-0017

This Unit 1 modification replaced a sway strut and clamp with similar but larger size components and modified the base plate. This change was necessitated by an updated stress analysis, which showed that the original pipe support, Hanger MS-1002-HL5002, would fail under the most restrictive load case. The inspectors reviewed the design package including stress calculations and concluded that the modification was completed satisfactorily.

4.4 ECNP 89-C-0063

This Unit 2 modification involved the installation of an overhead beam with a lifting lug to facilitate the disassembly of the four FWIVs. This modification was generated to support the replacement of the seal ring on the FWIV 1C valve and to provide the same capability for the three other FWIVs. The inspectors reviewed the design package and work control documents and examined the installation in the field.

One discrepancy was identified with a drawing detail provided on page 14 of the design package; this detail had been extracted from plant Drawing FW-2116-HF-5001. The detail showed a pipe support structure which had been modified to remove an interference for the lifting of the FWIV. The drawing showed an I-beam; however, field verification showed that two channels were installed instead. The base drawing, showing the as-installed configuration with the two channels, was verified to be correct. The discrepant drawing in the modification package resulted from an error in translation from the base drawing, but it did not adversely impact the performance of the modification. In all other respects, the design and installation of this modification were satisfactory.

4.5 Modification 88-246

This Unit 1 modification involved the replacement of approximately 125 feet of 6-inch diameter safety injection (SI) piping from the refueling water storage tank (RWST) to the centrifugal charging pumps (CCPs). The licensee had discovered that, while in Mode 5 with the RWST drained below the 50 percent level, an air pocket could form in the high point of this SI piping and prevent the CCPs from operating. The modification was to reroute piping to ensure that the high point would be below the RWST level in all modes.

The inspectors selected this modification for a detailed plant walkdown of inline piping components and pipe supports. The inspectors determined that, over an approximately 100 foot segment of the new piping, all pipe supports, spool pieces, field welds, and gross dimensions and configurations were accurately reflected on the revised isometric drawing (MDCN 88-0246-01) and associated amendments. The design package and work control documents were adequate to support this modification.

4.6 ECNP 89-M-0062

This Unit 1 modification involved the replacement of a pressure breakdown orifice on the high head safety injection (HHSI) pump "C" train miniflow recirculation line. The HHSI pump "C" minflow rate of 92 gpm was less than the 100 (+6) gpm recommended by the pump vendor. The design control package and work control documents were satisfactory.

The inspectors verified that postmodification testing (Procedure 1PSP03-SI-0026, dated September 5, 1989) included a flow test of both the recirculation line flow rate and the reactor coolant system (RCS) injection flow rate, since both were influenced by the modification. Test results were consistent with the established acceptance criteria.

4.7 ECNP 89-M-0282

This Unit 1 modification involved the replacement of an orifice plate with an orifice of larger bore size on the low head safety injection (LHSI) pump "A" train flow line. During the first refueling outage, difficulties were encountered in achieving the required injection flow rate from this pump. As a result of those difficulties the licensee developed this modification package.

All design control and work control documents associated with this modification were satisfactory. The inspectors reviewed postmodification test results, documented in test Procedure 1PSP03-SI-0027, performed on September 19, 1989. Injection, total pump, and recirculation flows all met the established acceptance criteria.

The modification packages were complete, and reflected good engineering control. Safety analyses pursuant to 10 CFR 50.59 were noted to be especially well written and were generally of better than average quality.

4.8 Temporary Modifications

The temporary modification (TM) program was inspected for programmatic detail and implementation effectiveness. The program appeared to be well-developed and provided guidance to cover a broad range of contingencies. Several safety analysis screenings per 10 CFR 50.59 were reviewed and determined to be comprehensive, addressing all relevant considerations. All TMs reviewed were well-documented and were in compliance with specified expiration dates.

The inspectors reviewed documentation supporting the following temporary modifications:

4.8.1 T1-CH-90-046

This TM installed an equivalent seal oil pressure regulator on essential chiller 12B. Additionally, a refrigerant valve was installed to measure the seal oil pressure. The inspectors verified the configuration and tagging of this TM in the field.

4.8.2 T2-EW-89-041, 042, 043

These TMs removed valve actuators on two essential cooling water (ECW) electro-hydraulic control valves per safety train and specified that the valves be locked open and made passive to defeat the fail-close design. The equivalent TMs for Unit 1, T1-EW-89-063, 064, 065, were also reviewed. The inspectors noted that both of the Train A valves (PV-6854 and 6904) and one of the Train B valves (PV-6864) in Unit 1 were not locked as required by the temporary modification. Danger tags had been placed on the three valves lacking physical locks. All other designated valves in both units had been locked as required and had been caution tagged. The inspectors questioned the absence of locks on the three danger tagged valves. The licensee stated that some difficulty had been encountered when attempts were made to install locks on these valves and that danger tags had been substituted to maintain positive control of valve position. This substitution of control methods is permitted by Station Procedure OPGP03-ZO-0027, "Locked Valve Program," Revision 7, which states that if a valve cannot be locked in position, it may be administratively locked by use of a clearance. The inspectors concurred that the licensee had established satisfactory control of the valves for nuclear safety considerations. The inspectors also concluded that the licensee should have modified the TM instruction to be consistent with plant policy regarding locked

valves. After the inspectors' inquiries, the licensee placed locks on the three valves in question prior to the exit meeting.

4.8.3 T1-CC-90-044

This TM installed spray shields around the shaft seals of the C-train component cooling water pump to prevent water damage to surrounding components. The inspectors verified the configuration and tagging of this TM in the field. No deficiencies were noted.

4.8.4 T2-AM-90-041

This TM jumpered two failed cells in the (nonsafety) Emergency Response Facility Data Acquisition Display System Uninterruptible Power Supply (ERFDADSUPS) 250 VDC battery bank. Documentation of this TM was satisfactory.

4.8.5 T1-CV-90-029

This TM installed a locking collar to restrain the retaining ring in the groove on the stem nut of Centrifugal Charging Pump 1A. Documentation of this TM was satisfactory.

4.8.6 T2-RH-90-032

This TM defeated the automatic closure interlock of two residual heat removal (RHR) suction valves per safety train [A (B,C) 2RH MOV 0060 A(B,C) and A(B,C) 2 PH MOV 0061 A(B,C]. Documentation of this TM was satisfactory.

4.8.7 T2-TM-90-025

This TM installed new grounding devices on the turbine generator. Documentation of this TM was satisfactory.

4.9 Quality Assurance (QA) Audit

The inspectors reviewed the results of several QA audit reports, for audits performed in August and September 1990, in the area of Design Change and Modifications. Deficiencies were noted and documented in the audits.

Review of the responses to the findings indicated that management was aggressive in responding to the findings and that the corrective actions were adequate. The NRC inspectors noted deficiencies similar to those identified by the QA audits; however, the corrective actions proposed in response to the audit findings should eliminate the deficiencies.

5. CONCLUSION

Overall, the review and examination of the plant modification and temporary modification programs indicate that these programs and their implementation are functioning properly and in accordance with approved procedures.

6. EXIT MEETING

The inspectors met with the personnel identified in paragraph 1 on November 30, 1990, and discussed the scope and findings of the inspection. The licensee did not identify, as proprietary, any of the information reviewed by the inspectors during the inspection.

ATTACHMENT

DOCUMENTS REVIEWED

PROCEDURES NUMBER	REVISION	SUBJECT	DATE
IP-3.01Q	6	Plant Modifications	July 28, 1989
IP-3.24Q	3	Engineering Change Notice Package	July 28, 1989
OPGP03-ZO-0003	10	Temporary Modifications	June 5, 1990
OPGP03-ZE-0036	0	Modification Work Order	May 29, 1990
IP-3.19Q	2	Design Control	October 9, 1989
OEP-3.05Q	6	Preparation of Design Packages for Modifications	June 11, 1990
OPGP03-ZE-0031	6	Design Change Implementation	May 2, 1989
OEP-10.05Q	2	Engineering Configurations/ Programmatic Review	June 14, 1989
IP-3.20Q	3	10 CFR 50.59 Evaluations	August 24, 1990

AUDITS/ASSESSMENTS

- Nuclear Assurance Audit 90-11, "Design/Modification and Nuclear Fuel Activities," dated September 13, 1990
- Technical Assessment 90-01, "Outage Modification Assessment," dated August 13, 1990