

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-498/87-40  
50-499/87-40

Construction Permits: CPPR-128  
CPPR-129

Dockets: 50-498  
50-499

Licensee: Houston Lighting & Power Company (HL&P)  
P. O. Box 1700  
Houston, Texas 77001

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

Inspection At: STP, Matagorda County, Texas

Inspection Conducted: May 11 through July 3, 1987

Inspectors: *R. E. Taylor* 8/26/87  
for C. E. Johnson, Senior Resident Inspector Date  
Project Section C, Reactor Projects Branch

*R. E. Taylor* 8/26/87  
for D. L. Garrison, Resident Inspector, Project Date  
Section C, Reactor Projects Branch

Approved:  8/27/87  
G. L. Constable, Chief, Project Section C Date  
Reactor Projects Branch

Inspection Summary

Inspection Conducted May 11 through July 3, 1987 (Report 50-498/87-40;  
50-499/87-40)

Areas Inspected: Routine, unannounced inspection including site tours, licensee action on previous inspection findings, licensee action on previously reported items, licensee action on IE Notices, followup on 10 CFR Part 21 reports, pipe supports and restraints, and followup on allegations.

Results: Within the seven areas inspected, one violation was identified (failure to follow procedures, paragraph 7).

DETAILS1. Persons ContactedPrincipal Licensee Employees

- \*J. T. Westermeier, Project Manager
- T. J. Jordan, Project QA Manager
- \*C. A. Ayala, Project Compliance
- A. C. McIntyre, Principal Engineer
- \*S. Head, Lead Project Compliance Engineer
- \*W. P. Evans, Project Compliance Engineer
- J. E. Geiger, General Manager, Nuclear Assurance
- I. L. Guthrie, Manager, SAFETEAM
- \*J. Mertink, Technical Support

Bechtel Power Corporation (Bechtel)

- R. H. Medina, Lead QA Engineer
- C. W. Humes, Site Project Engineer

In addition to the above, the NRC inspectors also held discussions with other members of HL&P, Bechtel, and Ebasco staffs.

\*Denotes those individuals attending the exit interview conducted on July 2, 1987.

2. Site Tours

The NRC resident inspectors made routine site tours of Units 1 and 2 in order to observe ongoing work activities and the condition of installed safety-related equipment, and plant status. The following areas were inspected: fuel handling buildings (FHB), mechanical and electrical auxiliary buildings (MEAB), diesel generator buildings (DGB), reactor containment buildings (RCB), isolation valve cubicles (IVC), and associated laydown and warehouse areas.

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

3. Licensee Action on Previous Inspection Findings

(Closed) Open Item (498/8707-01; 499/8707-01)

This item was identified by the NRC inspector and concerned requirements in paragraph 5.7.3.4 of Specification 5L340JS1002 which allows welding in excess of that required by design drawings. The NRC inspector felt that

it was not good industry practice to add weld material in excess of design drawing requirements. A review of several pipe support drawings indicated that most structural joint configurations are of a type where additional welding would not impact on the function of the connection. Some connections do exist where additional weld, if added, would compromise the integrity of the connection; however, these joints are shown on the drawings with a prohibition against adding any additional weld material. Interviews with quality control (QC) personnel indicate that they fully understand the intent of the specification and that to the best of their knowledge no cases have been identified which violates pipe support "function" as defined by paragraph 5.7.3.4.

This item is considered closed.

(Closed) Open Item (498/8521-64; 499/8521-64)

This item concerned the use of Fel-Pro 1000 thread lubricant. This anti-seize product has not been purchased for use at the site since 1982. All equipment where Fel-Pro 1000 was used, except a few Westinghouse supplied valves, have been disassembled, cleaned, and reassembled using Fel-Pro 5000. The remaining valves are being tracked on the action item listing as Item 8700543-936 and will be cleaned and reassembled at the first maintenance. Westinghouse is preparing a listing of the valves that may be affected. An inspection of storage areas including warehouses, anti-warehouse, tool rooms, and work areas over a 3-month period did not reveal any Fel-Pro 1000 on site; also the reactor lower internals were observed being assembled with Lubriplate No. 1, an approved anti-seize compound. The affected technical manuals are due to be updated at the next revision which is estimated to be in late 1987. The action response by the licensee appears to be adequate and this item is considered closed.

(Closed) Violation (498;499/8719-01, 499/8719-02, 499/8719-03)

This item involved three examples of one violation. In the body of the report (50-498;499/87-19) these examples are listed separately by tracking number as above.

The findings consisted of the following:

- a. Pipe supports were not in compliance with procedures because they contained protective coatings on their machined parts.
- b. Heating, ventilation, and air conditioning (HVAC) support did not meet minimum edge distance as required by SSP 14 for the 5/8-inch Hilti bolt attaching angle to the building structure.
- c. Class 7 HVAC supports violated the installation cut sheet.

Review of the licensee response and corrective action indicated that they had addressed the generic concerns adequately and had retrained craft and QC inspectors (safety and non-safety) in all Class 7 inspections. This item is considered closed.

4. Licensee Action on Previously Reported Items (10 CFR 50.55(e))

The NRC inspectors reviewed the following deficiency evaluation reports (DER) and/or incident review committee (IRC) reports and determined that the licensee has taken adequate corrective action on the subject item.

(Closed) IRC 168 and 307, Microbiologically Influenced Corrosion

These items concerned the effects of microbiologically influenced corrosion (MIC) on stainless steel. These concerns were confirmed as problem areas to the NRC in 1983. Since that time the licensee has developed and implemented adequate programs to inspect for, evaluate, and institute corrective action for each area where MIC is suspected including tanks, sumps, and piping systems.

(Closed) IRC 377, Water Hammer in the Letdown System

This item involved a water hammer event in the chemical and volume control system (CVCS) encompassing the letdown system in the RCB. Damage was done to snubbers and hangers. The NRC inspector reviewed the document package which adequately addresses the problem. Corrective action taken by the licensee in replacing and repairing the restraints was verified through an inspection of the system where the damage occurred. It was observed that corrective action has been performed and no discrepancies were noted in the construction area.

The design engineering aspects of this IRC are being reviewed by the Office of Nuclear Reactor Regulation (NRR) (as part of an FSAR change).

(Closed) IRC 383, Shorted HVAC Fan Motors

This item concerned three 150 horsepower electrical auxiliary building (EAB) HVAC fan motors that were run at excess power levels resulting in motor winding short circuits. The licensee has repaired or replaced the three motors and reduced the energy level to nameplate rating by readjusting the angle of the fan blades. HL&P plans to increase the horsepower of these fan motors in the near future in order to improve reliability.

(Closed) IRC 374, Main Steam (MS) Power Operated Relief Valves (PORV) Hydraulic Systems

The subject of this IRC is the MS PORV hydraulic units. These items were neglected during the long storage period where little or no maintenance was performed; thus the units failed during the hot functional tests (HFT). Since failure, the units have been completely rebuilt by the manufacturer. The NRC inspector inspected the four refurbished components in Unit 1 which are in the process of being reinstalled.

(Closed) IRC 349, Water in Electrical Equipment

Due to lack of a roof on the IVC and heavy rain, water intruded into electrical panels and conduit and then into motor operators for valves and related equipment. The NRC inspector inspected the four valve cubicles and equipment therein and determined that the equipment has been satisfactorily cleaned out and reworked as necessary. The permanent roof has been installed and water has ceased to be a problem.

(Closed) IRC 378, Reactor Filters

This item concerns the degradation of the full flow filters utilized during the HFT. NRR has reviewed this matter and concluded that remaining filter fragments do not represent a significant, safety hazard. NRC Region IV inspectors have observed the licensee's search for the filter material and have concluded that the search was extensive and that all reasonable efforts have been made to locate the missing material.

(Closed) IRC 392, Telemecanique Class 1E Motor Control Centers (MCCs)

This item concerned Telemecanique seismic qualification report for Class 1E MCCs. During a routine review of vendor seismic reports, it was identified that Telemecanique had a test requirement for snug tightening of the bolts connecting the MCC side panels to the top of the base mounting sills. The vendor also required the torque of the bolts to be 150 to 162 inch-pounds. This was required to be verified after installation, but prior to energization.

The requirement was not included in the supplier's installation drawings or the technical manual. In addition, the requirement was not inserted in the seismic qualification report until after the MCCs had been installed and energized at STP. Since this requirement did not exist in the vendor manual, the MCCs were received and installed without verification of the torque values.

Review of the licensee's corrective action indicated that all MCCs involved in Units 1 and 2 have been torqued and inspected by QC. This item is considered closed.

(Closed) IRC 220, Failure of Fire Dampers to Close

This item concerned Ruskin fire dampers failure to close. Ruskin filed a Part 21 report on fire dampers that would fail to close under normal flow conditions resulting in the penetration of fire barriers during a postulated fire. This violates the requirements of 10 CFR 50, Appendix A, General Design Criterion 3, Fire Protection. This deficient condition affects Model NIBD-23 furnished with closure springs by Ruskin which were supplied to STP.

Review of the licensee's corrective action indicates that in-situ testing of these dampers was done with larger springs added for closure. Where dampers failed with the addition of the larger springs, interrupters were added upstream of the affected damper for added assurance. Thermal fusible links on certain multiple section dampers were replaced with electrothermal links where simultaneous closure of the damper sections is required. Administrative controls were added to stop air flow in the EAB heating, ventilating, and air conditioning (HVAC) equipment rooms which require operator action to manually de-energize the appropriate fans upon detection and verification of fire in any one of the segregated HVAC equipment rooms.

This administrative control will be included in the Post-Fire Operator Action and Equipment Protection Requirements (5A019MFP001, Revision 5). This item is considered closed.

5. Licensee Action on IE Notices (IEN)

Licensee action on IEN 83-72, "Environmental Qualification Testing," has been reviewed by the NRC inspector and found satisfactory.

6. Followup on 10 CFR Part 21 Reports

The following Part 21 reports are considered closed based on the licensee evaluation that the subject of the report does not effect the processes or design function:

<u>NRC Log No.</u>	<u>Reporting Vendor</u>	<u>Letter Date</u>
P21-87-25	Sorrento Electronics	02-23-87
8604372	Cardinal Products	03-11-86
8604642	GE/Yokogawa	06-09-86
P21-87-19	Limitorque	11-10-86
P21-87-31	Houglito	12-19-86
P21-87-20	Automatic Sprinkler	12-01-86

## 7. Pipe Supports and Restraints

During a walkdown tour of Unit 1 containment, the NRC inspector was inspecting the Reactor Containment (RC) loops, and Residual Heat Removal (RHR) systems and restraints. During this observation two restraints were noticed missing and one spring hanger was noticed to have its locks still in place. The NRC inspector discussed his findings with HL&P. The NRC inspector was informed that the two restraints were planned to be installed shortly and the reason they were not is because of possible damage to them if installed early due to their unique design. This was verified by the NRC inspector. The NRC inspector was informed that Support No. RC-1212-HL-5001 should have the stops installed because the system was empty because of work being done to the lubrite plate attached. The NRC inspector then requested the startup work request (SWR) and nonconformance report (NCR) generated on the support. Review of these documents indicated that the work on the NCR No. SC-04048 was complete, and that SWR No. 16820 was also complete. However, the SWR had special instructions which required the Startup Support Group to record cold spring settings before disassembly, and reset to recorded load after rework was complete as required by SSP 9. The construction support group failed to maintain cold position after balancing of the piping system in that they did not assure the line was filled with water prior to verifying cold load position. This was attributed to a field engineer's lack of awareness of the requirement and the Startup Support Group not interfacing with construction to have pipe supports rebalanced after rework. Further investigation by the licensee has identified other deficiencies which are detailed in Significant Problem Deficiency Report (SPDR) No. E87068Q.

This is an apparent violation (498/8740-01).

## 8. Followup on Allegations

(Closed) Allegation 4-87-A-051

It was reported that during the structural integrity test (SIT) and integrated leak rate tests (ILRT) that some grout was displaced and some small voids were formed. NRC inspectors were present and observed the SIT and the ILRT. Those tests were successfully completed and indications are that the leak rate was very small (a small fraction of the allowable design leak rate). Since the allegation was from an anonymous source and additional detail could not be obtained, the NRC inspector discussed the tests with other inspectors to learn what may have occurred which would have led to the allegation. One possibility is that beneath the concrete in the containment and on top of the liner plate, there is a system of leak chase channels welded to the plate; these channels are connected to standpipes which can monitor any leakage. In preparation for the tests a minor amount of concrete had to be chipped away from the standpipe connections for access. After the test these areas were grouted.

During the same time frame, minor cosmetic repairs were made outside of the containment at some electrical penetrations by filling in or building up using grout as the filler.

The NRC inspectors who were present during the tests observed no discrepancies similar to the allegation.

This allegation could not be substantiated.

(Closed) Allegation 4-87-A-032

This item concerned a news report that a local fastener distributor had alleged the use of "Counterfeit Bolts" at STP. It was alleged that: (1) a scrap bolt, from the site, had been privately tested and failed a test for hardness; (2) inferred that bolting on site was generally questionable as to quality; and (3) made innuendo that some project bolting may be counterfeit.

HL&P investigated the remarks made during the news broadcast and reported their findings to NRC Region IV in a letter dated May 27, 1987. The NRC inspector reviewed the results of HL&Ps review and observed the following:

The bolt reported as failing the hardness test was subsequently tested by Southwest Laboratories (Report No. T-OH747) and was found to meet all of the requirements for the American Society for Testing Materials (ASTM) A307 Grade A specification. Tests were made for chemistry, tensile strength, and hardness.

The problems identified by the NRC Construction Appraisal Team (CAT) in 1985 were also mentioned in the news stories. Control of safety-related bolts was an issue identified by CAT which has been evaluated for corrective action and found to be satisfactory. This item was closed in previous inspection reports.

One nonsafety-related valve vendor was found to have incorrect bolting in non-pressure retaining parts in some valves. These incorrect bolts were marked as Grade 8, but, in fact, were Grade 8.2. These bolts were furnished by Pacific Valve as a part of their product. An analysis of the test results by Pacific resulted in their finding that the bolts exceed the requirements for their intended use.

Site Procedures SSP-52, Installation, Assembly, and Disassembly of Permanent Plant Equipment; and SSP-57, Installation, Assembly, and Disassembly of Electrical Equipment, contain instructions for the control and verification of fasteners. The licensee also has a User Testing program which test various materials including threaded fasteners.

Although it cannot be concluded that the mismarked bolts are not counterfeit, HL&P has a testing and quality program that should ensure that bolts used onsite are appropriate for their intended use. These allegations could not be substantiated.

(Closed) Allegation 4-87-A-039

It was reported that two nonsafety-related hangers in the Unit 1 closed loop auxiliary cooling water system in the turbine building had been deleted in a drawing revision; however, the hangers were still in place after 2 years. The NRC inspector verified that the hangers were still in place. The responsible construction engineers were notified. Work packages and construction work requests were generated and the supports have been removed. The NRC inspector verified the removal and reviewed the situation with construction engineering to assure that this was an isolated case.

It was also alleged that there were unsupported runs of gland steam pipe inside the condensers as long as 35 to 40 feet. It was determined that the runs of pipe were actually 23 to 25 feet and in accordance with Westinghouse engineering criteria.

It was alleged that supports were added to the gland steam pipe in the Unit 2 condensers and the same pipe in Unit 1 was not considered for these additional supports. The NRC inspector determined that six rigid simple supports were added to the Unit 2 piping to minimize possible deflection although they were not required and at the time of installation there was room in the condensers where the work could be done. These supports were not added to the Unit 1 condensers because they were complete and it was considered not feasible, because of lack of working space. The allegations were substantiated but did not impact on safety.

(Closed) Allegation 4-87-A-049

This allegation is from the same individual as Allegation 4-85-A-096 discussed in NRC Inspection Report 50-498/86-10; 50-499/86-10. Additional information has been received wherein the alleger stated that fully assembled valves were passing through the sand blast booth and there was a possibility that grit was getting into the working parts. The earlier followup should be supplemented in Part 1 of the summary section with understanding that the licensee has now made a change to coatings specification 3C080AS1001, paragraph 9.1.6.A to clarify the intent of the 30 contiguous square inches as a repair. In Parts 2 and 3, there is no change.

Discussions with the allegor indicated the following:

- ° The protection that was provided for the valves, parts and the actuators was masking with tape around the limit switch compartment cover.
- ° The allegor stated that he objected to inspecting the valve actuators because he could not be sure that the masking tape would not be removed while in the blast booth. The allegor did not recall whether or not he had actually inspected valve actuators.
- ° The allegor's main concern was not that the valves were not adequately protected, but that he felt that the valves and actuators should not have been routed through the blast shop.

The NRC inspector reviewed NCRs BP-00459, BP-00440, BP-00465, BP-00437, BP-00438, BP-00439, and BP-00459. These NCRs identified the safety-related valves that had minor coatings problems which led to the allegation. The valves were shipped to and received at STP. Upon receipt, these valves were noticed to have inadequate cure for the inorganic zinc primer which resulted in the NCRs being initiated. The majority of the valves were shipped back to the vendor for repair and some were use-as-is. The other valves and actuators were sent to the paint shop to be blasted and recoated.

There were 22 safety-related valves, 13 nonsafety-related valves, and 33 hand wheels sent through the blast shop for repair.

The NRC inspector selected from the list of valves sent to the blast shop, eight safety-related motor operated valves (MOVs) for examination and review. Five of the valve bodies (carbon steel) were coated but the actuators had the original factory paint intact. The motor operators of three stainless steel valves were recoated and in accordance with normal practice, the valve bodies were not.

For the eight motor operated valves inspected, there was no apparent damage to the valves, shafts, gear boxes or the motors. Preventive maintenance (PM) records were reviewed and PMs were documented.

It was substantiated that valves and actuators did go through the blast and paint shops. It was also established during an interview with the allegor that the valve and actuators were protected prior to blasting and coating. By inspection of the MOVs and review of PM records it was not substantiated that damage had occurred. This allegation is considered closed. The MOVs inspected are as follows:

<u>Room No.</u>	<u>Valve No.</u>	<u>Serial No.</u>	<u>Tag No.</u>	<u>Reference Drawing No.</u>	<u>PPM No.</u>
F008	SI-0011B	CAB229	2N122TSI0011B	5F369PSI572, SHTA01	V-04344
C308SW	CC-0339	E6288202	3R202TCC0339	4C369PCC407, SHT04	V-10956
C308SW	CC-0356	E6288201	3R202TCC0356	4C369PCC407, SHT04	V-00187
C308C	CC-0392	E628822	3R202TCC0392	3C369PCC407, SHT29	V-00771
C308SE	CC-0390	E6288204	3R202TCC0390	3C369PCC407, SHT05	V-10958
C308SE	CC-0374	E6288203	3R202TCC0374	3C369PCC407, SHT05	V-10957
M108C	CV-0033A	CAB2212	2R171TCV0033A	2M369PCV217, SHTA01	V-04346
F008	SI-0014B	CAB2215	2N122TSI0014B	5F369PSI572, SHT04	V-06771

8. Exit Interview

The NRC inspector met with licensee representatives (denoted in paragraph 1) on July 2, 1987, and summarized the scope and findings of the inspection.