

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-498/90-33  
50-499/90-33

Operating Licenses: NPF-76  
NPF-80

Dockets: 50-498  
50-499

Licensee: Houston Lighting & Power Company  
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: October 15-19, 1990

Inspector:

J. Barnes  
L. D. Gilbert, Reactor Inspector, Materials  
and Quality Programs Section, Division of  
Reactor Safety

10/29/90  
Date

Approved:

J. Barnes  
J. Barnes, Chief, Materials and Quality  
Programs Section, Division of Reactor Safety

10/29/90  
Date

Inspection Summary

Inspection Conducted October 15-19, 1990 (Report 50-498/90-33)

Areas Inspected: No inspection of Unit 1 was conducted.

Results: Not applicable.

Inspection Conducted October 15-19, 1990 (Report 50-499/90-33)

Areas Inspected: Routine, unannounced inspection of inservice inspection (ISI) activities for Unit 2.

Results: The inspector found that the nondestructive examinations specified in the ISI examination plan for Unit 2 were, in general, being effectively performed. A noncited violation was, however, identified pertaining to incomplete ultrasonic examination of the pressurizer support skirt attachment weld. This examination indicated a weakness existed in the training of contract personnel used to perform ISI examinations.

DETAILS

1. PERSONS CONTACTED

1.1 HL&P

- \*W. H. Kinsey, Vice President, Nuclear Generation
- \*T. J. Jordan, General Manager, Nuclear Assurance
- \*M. R. Wisenburg, Plant Manager
- \*A. C. McIntyre, Manager, Support Engineering
- \*D. J. Dever, Manager, Plant Engineering Department
- \*J. W. Loesch, Plant Operations Manager
- \*K. J. Christian, Unit 1 Operations Manager
- \*D. R. Keating, Director, Independent Safety Evaluation Group
- \*S. M. Dew, Manager, Nuclear Purchasing and Material Management
- \*J. C. Younger, Staff Engineer, Design Engineering Department
- \*R. L. Beverly, Supervising Engineer, Design Engineering Department
- \*S. K. Hubbard, Quality Control (QC) Supervisor
- \*W. L. Mutz, INPO Coordinator
- \*C. A. Ayala, Supervising Engineering, Licensing
- \*A. K. Khosla, Senior Engineer, Licensing

1.2 Southwest Research Institute, Inc. (SwRI)

- \*A. R. Anderson, Project Manager

1.3 NRC

- \*J. I. Tapia, Senior Resident Inspector

The inspector also interviewed other licensee and contractor employees during the inspection.

\*Denotes attendance at exit interview conducted on October 19, 1990.

2. INSERVICE INSPECTION (73753)

The purpose of the inspection was to ascertain whether the inservice inspection (ISI) examinations, including repair and replacement, of ASME Code Class 1, 2, and 3 pressure retaining components for Unit 2 are performed in accordance with the ASME Code Section XI and correspondence between NRR and the licensee concerning relief requests.

The inspector met with personnel from engineering, quality control (QC), and Southwest Research Institute (SwRI) that were responsible for the scheduling the ISI examinations. The inspector was informed that examinations selected from the first 10-year interval ISI program plan and scheduled to be performed during 2RE01 (i.e., the first refueling outage for Unit 2) were listed in an examination plan for 1990. The engineering coordinator indicated that seven

refueling outages were planned for Unit 2 during the first 10-year interval and the examinations selected for 2RE01 consisted of 16 percent of the examinations required to be completed over the 10-year period. The inspector was also informed that the surface examinations were being performed by QC and the volumetric examinations were being performed by SwRI, a contractor. The inspector selected three examinations for witnessing which included a surface examination and two volumetric examinations.

The surface examination selected was listed in the ISI examination plan as a liquid penetrant (PT) examination of ISI Weld No. 12-RH-2102-1, a 12-inch diameter pipe butt weld in the Class 2 portion of the residual heat removal (RH) system. The examination witnessed was performed by two QC Level II examiners using the PT method in accordance with the requirements of Procedure NPED-6.2, "Nondestructive Examination Procedure," Revision 3. The inspector verified that the examination performed was consistent with the requirements of the procedure in the following areas: surface cleaning and temperature, penetrant and developer application, evaluation, and certification of personnel and penetrant materials.

The first volumetric examination was listed in the ISI examination plan as an ultrasonic (UT) examination of ISI Weld No. 12-RH-2301-10, a 12-inch diameter pipe butt weld in the Class 1 portion of the RH system. The examination witnessed was performed by a SwRI Level II examiner and assisted by a Level II for recording the data, using the UT method in accordance with the requirements of SwRI Procedure STP-UT52, "Manual Ultrasonic Examination Of Similar And Dissimilar Metal Welds In Austenitic Piping Systems," Revision 0. The inspector verified that the examination performed was consistent with the requirements of the procedure and the examination plan in the following areas: basic calibration block; calibration of equipment; angle, size, and size of search unit; couplant material same as used for calibration and certification; temperature of calibration block and material examined; examination technique; evaluation and data recording; and personnel certification.

The second volumetric examination was listed in the ISI examination plan as a UT examination of ISI Weld No. PRZ-20SK, a full penetration weld attaching the support skirt to the pressurizer. The examination witnessed was performed, by a SwRI Level II examiner and assisted by a Level I for recording the data, using the UT method in accordance with the requirements of SwRI Procedure STP-UT21, "Manual Ultrasonic Examination Of Pressurizer Support Skirt Attachment Welds," Revision 0. The inspector verified that the examination performed was consistent with the requirements of the procedure and the examination plan in the following areas: basic calibration block; calibration of equipment; angle, size, and size of search unit; couplant material same as used for calibration and certification; temperature of calibration block and material examined; examination technique; evaluation and data recording; and personnel certification. During the UT examination performed on October 17, 1990, the inspector noted that the examiner did not perform UT examination on the bottom head base metal of the pressurizer adjacent to the support skirt attachment weld which was required by the procedure to achieve full coverage of the examination volume defined in Figure 1 of the procedure. The UT examiner

stated that he was required to UT examine the weld but was uncertain of the examination requirements for the adjacent base metal. Additionally, the UT examiner several times missed the upper portion of his scan on the weld surface when using the 35 degree search unit in the vertical direction. The inspector informed the examiner of the areas on the weld which he had missed. The examiner explained that he missed the areas because, while watching the UT instrument screen and scanning, he relied on the weld-to-base metal transition to determine vertical scan extent and mistook weld surface roughness as the transition; therefore, he stopped the vertical up scan and then started the vertical down scan short of the weld edge. The inspector informed the SwRI project manager and the licensee on October 17, 1990, of the discrepancies observed during witnessing of the UT examination. The licensee and its ISI contractor met with the inspector on October 18, 1990, to inform the inspector of the actions taken or initiated which was documented on October 19, 1990, in a memorandum from the Supervising Engineer for the ISI Group to the Manager of Support Engineering. The memorandum stated that the following corrective actions have been taken or initiated:

- a. SwRI Project Manager conducted training of all SwRI and subcontractor (Sonic Systems, Inc.) nondestructive examination (NDE) personnel on October 18, 1990, to emphasize the importance and methods of assuring complete coverage, understanding the procedure requirements, and to also stress a more active role by the Level I technician.
- b. HL&P will voluntarily stop work on NDE to conduct training of all SwRI and Sonic personnel on October 19, 1990 to assure NDE personnel have a thorough understanding of all procedures applicable to the examinations remaining to be performed during this outage. This training will be performed by a NDE Level III consultant.
- c. Augmented, on-site, specific NDE training will be provided to contractor/subcontractor NDE technicians performing ISI examinations during subsequent outages. This training will be conducted prior to the start of examinations and will emphasize any unique STP practices or special requirements of NDE procedures and will be completed in a structured format and documented.
- d. The Unit 2 pressurizer support skirt was stamped on October 18, 1990, with "V" marks to aid in locating and defining the required scan area. The procedure will be revised to show scan areas relative to the stamp marks.
- e. HL&P will emphasize the role of the Level I in the performance of examinations and use them more effectively to assure compliance with procedures, including the extent of scanning.
- f. SwRI Project Manager (or his designee) and HL&P contractor Level III will perform additional surveillance of NDE technicians for increased assurance of procedure compliance.

g. Complete coverage of the pressurizer support skirt weld was performed subsequent to the NRC inspector's observations on October 17, 1990.

In addition to the prompt and extensive corrective action program, the memorandum documented the results of the licensee's investigation which concluded that the problem was isolated to this unique procedure and the root cause was inadequate training of these examiners on this specific UT procedure.

The inspector also noted that the UT examination is not a Section XI Code required examination but was conducted to supplement the magnetic particle (MT) surface examination on the outside weld and base metal surface and in lieu of performing a MT examination on the inaccessible inside surface of the skirt attachment weld. This supplemental UT examination was addressed in HL&P relief request No. RR-ENG-09. The inspector contacted NRR for a status on the NRR review of the licensee's ISI program. NRR stated that the review had been completed and sent a copy of the letter to the inspector on October 18, 1990. The letter which was dated September 24, 1990, accepted the Unit 2 ISI program and granted the provisions of relief request No. RR-ENG-09.

Failure to perform the UT examination in accordance with the specified procedure is an apparent violation; however, the violation is not being cited because it meets the criteria in Section V.A. of the Enforcement Policy.

### 3. EXIT INTERVIEW

An exit interview was conducted on October 19, 1990, with those personnel denoted in paragraph 1 in which the inspection findings were summarized. The licensee confirmed that work had been stopped on ISI examinations performed by its contractor SwRI to conduct training as stated in the memorandum dated October 19, 1990. No information was presented to the inspector that was identified by the licensee as proprietary.