# APPENDIX

### U.S. NUCLEAR REGULATORY COMMISSION REGION IV

NRC Inspection Report: 50-498/90-20 50-499/90-20 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 Electric Generating Station (STPEGS) Units 1 and 2

Inspection At: STPEGS Site, Bay City, Matagorda County, Texas

Inspection Conducted: May 14-17, 1990

Inspector:

L. T. Ricketson, Senior Radiation Specialist Facilities Radiological Protection Section

613/90 Date

6/13/98 Date

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Approved:

ncu Murray, Chief, Facilities Radiological Protection Section

Inspection Summary

#### Inspection Conducted May 14-17, 1990 (Report 50-498/90-20; 50-499/90-20)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection activities associated with the recent refueling outage.

Results: Within the areas inspected, no violations or deviations were identified. Health physics (HP) personnel were found to be qualified per Technical Specification (TS) requirements. External and internal exposure controls appeared to be functioning well. Efforts to control radioactive materials and contamination were sometimes hampered by poor communications between departments. Increased emphasis had been placed on improving and expanding the ALARA program.

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### DETAILS

1. Persons Contacted

HL&P

\*J. R. Lovell, Technical Support Manager R. Aguilera, HP Supervisor, Unit 1
\*C. Ayala, Supervising Engineer
\*H. W. Bergendahl, HP Manager K. Birchfield, HP Supervisor, Unit 1
\*J. P. Bleau, HP General Supervisor, Unit 1 R. Fisher, Chemical Operator
\*T. J. Jordan, General Manager, Nuclear Assurance
\*A. K. Khosla, Senior Engineer, Licensing
\*J. W. Loesch, Plant Operations Manager R. V. Logan, Supervisor, ALARA
\*W. C. Parish, General Supervisor, Chemical Operations T. W. Tesmer, Supervisor, Outage Planning S. Torrey, HP Training Coordinator

NRC

\*J. I. Tapia, Senior Resident Inspector

\*Denotes those present at the exit meeting on May 17, 1990.

The inspector also interviewed other licensee and contract employees during the course of the inspection.

### 2. Observations

The following are observations the inspector discussed with the licensee representatives. The observations are not violations, deviations, unresolved items, or open items. Observations are identified for licensee consideration as program improvement items, but have no specific regulatory requirement.

#### Respirator Issuance

Respirators issued were not always of the size as worn by individuals during the latest fit test. See paragraph 5.

### Critical Loads List

The licensee did not have a complete list of lighting, ventilation, and electrical outlets associated with each electrical bus. See paragraph 6.

### Face Shields

The licensee had not established procedures for controlling the use of face shields in contaminated areas. See paragraph 6.

### Prejob Person-Rem Estimates

Support groups did not always provide proper work hour estimates, causing subsequent estimates of expected person-rem to be too low. See paragraph 7.

# 3. Training and Qualifications of New Personnel

The inspector reviewed qualifications of licensee and contract HP personnel to determine compliance with TS 6.4.1 which requires that personnel be trained and qualified in accordance with ANSI N18.1-1971.

The licensee hired 33 temporary contract HP personnel to supplement the permanent staff during the refueling outage. The inspector reviewed resumes and determined that all contractor personnel were properly qualified. The inspector also noted that the licensee had established written guidance for the evaluation of contractor personnel work experience.

The licensee used a written screening examination to help select prospective contract HP personnel. Individuals that successfully completed the screening examination were given a 3-day course in site-specific procedures and were required to demonstrate their knowledge of the procedures. The inspector reviewed selected examples of qualifications cards for the individuals and determined that they had been completed satisfactorily. The inspector interviewed several contractor HP technicians and observed them performing assigned work activities.

No violations or deviations were identified.

#### External Exposure Control

The inspector reviewed the licensee's external exposure control program to determine compliance with TS 6.11 and 10 CFR Parts 19.12, 20.101, 20.102, 20.105, 20.202, and 20.401, and agreement with the commitments of Chapter 12.5 of the Updated Final Safety Analysis Report (UFSAR).

The licensee had discontinued the use of standard pocket ion chambers and was using electronic dosimeters for everyone entering the radiological restricted area (RRA). The devices displayed the integrated dose and were set to alarm at prechosen values, depending on the administrative dose limits associated with the particular radiation work permit (RWP) and work authorization number. The computer system updated the individuals' dose and dose margin (the amount left before reaching the administrative limit) after each exit from the RRA. The inspector determined that the dosimeter computer system was able to stand alone if the main computer system were to go down and if there were a problem with the dosimeter computer system, doses could still be logged manually. The inspector reviewed radiological posting and controls. The inspector also reviewed work packages and noted that, since the last refueling outage, the licensee had initiated steps to ensure that periodic reviews were performed of active RWPs to determine whether or not the instructions, precautions, and coverage needed to be changed because of changing work conditions.

In response to a problem of radiation streaming identified during the previous refueling outage (see NRC Inspection Report 50-498/89-44; 50-499/89-44), the licensee positioned a large concrete block in front of the sludge lance ports to act as temporary shielding. The licensee plans to initiate a design modification to install permanent shielding.

No violations or deviations were identified.

#### 5. Internal Exposure Control

The inspector reviewed the licensee's program for control of internal radiation exposure to determine compliance with TS 6.11 and 10 CFR Parts 20.103, 20.201, and 20.401; and agreement with the commitments in Chapter 12.5 of the UFSAR and the recommendations of Regulatory Guide (RG) 8.15, NUREG-0041, and Industry Standards ANSI Z88.2-1980.

The inspector reviewed respirator issue procedures and records. The inspector noted that technicians who issued respirators used a computer terminal to check the qualifications of individuals requesting respirators and verified that within the last year the person had respiratory protection training, a physical, and a fit test. The computer display also listed the size of the mask for which the individual had been successfully fitted and the date of the test. Typically, the results of the last two fit testings were displayed. By checking the respirator issue records with the qualification information, the inspector verified that, within the sample group, only qualified individuals were issued respirators. However, the inspector noted that in some cases, individuals were issued respirators of a size different from that which they were qualified for during the most recent fit test. Looking at the next most recent test results, the inspector found that the individuals had indeed qualified for the size issued. In all examples noted, the next most recent fit test was also within 1 year; therefore, this was not a violation of procedures. Although it may be possible for a particular individual to be qualified to wear various sizes of respirators, it is good practice to issue the size indicated by the latest fit test. This inspector observation was discussed with licensee personnel during the exit meeting on May 17, 1990.

No violations or deviations were identified.

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#### 6. Control of Radioactive Material and Contamination. Surveys, and Monitoring

The inspector reviewed the licensee's program for surveying/monitoring and controlling radioactive materials to determine compliance with TS 6.11 and 10 CFR Parts 19.12, 20.201, 20.203, 20.207, 20.301, and 20.401; and agreement with the commitments in Chapter 12.5 of the UFSAR.

The inspector verified that there was an adequate supply of portable radiation survey instruments and that instruments were properly calibrated and response checked. Some HP technicians stated that, at times, high volume air sampling equipment was scarce or hard to locate. This matter was discussed during a turnover meeting attended by the inspector where some supervisors also stated that this had been a concern. When checked at various times during the inspection, the inspector was not able to substantiate the concern because there was an adequate number of air samplers available. The inspector noted that tool contamination monitors had not been put into service.

As of May 15, there had been approximately 90 cases of personnel contaminations during 1990. The inspector reviewed selected examples of radiological occurrence reports involving personnel contaminations. The inspector noted that the licensee's investigation after one such instance occurring in Unit 1, Residual Heat Removal System Pump Room A, indicated that individuals had been allowed to wear face shields which had been previously worn in the potentially contaminated area. Licensee representatives stated that, in the future, face shields will be issued and collected as if they were articles of protective clothing. Licensee representatives further stated that, based on surveys performed after the incident, they do not believe the face shields were the source of contamination. The individuals were found to have contamination either on the forehead or near the nose, and the licensee representatives speculated that the workers touched those areas inadvertently with contaminated gloves. The individuals were unavailable for interview at the time of inspection.

The inspector did not identify specific violations related to the incident, but noted that instructions regarding the use of face shields had not been provided to workers. The inspector reviewed the results of whole body counts and confirmed that none of the individuals involved received a significant uptake of radioactive contamination. Results were below the licensee's administrative limit of 75 nanocuries for copalt-58, which, in turn, is below the action level set by the International Council on Radiation Protection of 145 nanocuries or 5 percent of the maximum permissible organ dose.

The inspector determined that planned electrical bus outages had twice affected the ventilation systems. On May 9, 1990, at approximately 9:55 p.m., members of the HP department noticed that the containment building pressure was no longer negative and contacted the control room. The proper air flow was reestablished in approximately 10 minutes. On May 10, as members of the HP staff prepared to decontaminate the Unit 1 fuel transfer canal, they noticed an increase in background radiation

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levels on a local frisker, and finally, high air flow from the fuel handling building toward the mechanical auxiliary building. The second event lasted approximately 30 minutes and resulted in the low-level contamination of several hundred square feet of clean area in the fuel handling building and 10 personnel contaminations.

The inspector reviewed the results of air samples in progress during the loss of negative pressure in containment and verified that there was no airborne radioactivity and, therefore, no release of radioactive material to the environment. Material was confined to the fuel handling building during the second event and posed no threat of release. The inspector identified no violations, but observed that the events resulted from a failure in communication and possessed the potential for unplanned release of radioactive materials under certain circumstances. The inspector further observed that the situation may stem from the fact that the licensee did not have a critical loads list which would indicate, in detail, which lighting, ventilation, or power receptacles would be affected by the outage of a particular bus.

The inspector noted that the HP department, using the radiation monitoring system, identified a leak under a steam generator bowl in Unit 2 which apparently resulted from vibration and subsequent fatigue of drain piping.

No violations or deviations were identified.

# 7. Maintaining Occupational Exposure ALARA

. \* The inspector reviewed the licensee's program to maintain occupational exposure ALARA to determine compliance with requirements of 10 CFR 20.1(c) and agreement with the commitments in Chapter 12.1 of the UFSAR and recommendations of RGs 8.8 and 8.10.

The licensee had increased staffing in the ALARA group. Two technicians were assigned to assist in implementing the ALARA program, making a total of four persons. Additionally, part of the HP operations staff was providing support to the ALARA program in that two supervisors and five technicians were involved in daily work planning, preliminary ALARA reviews, and RWP generation for both outage and nonoutage work.

The licensee was consolidating ALARA program guidance from different procedures into a draft comprehensive ALARA document. This document is scheduled to be approved and implemented in the near future.

In order to track and trend personnel dose resulting from low person-rem work, the licensee required workers logging into the RRA access control computers to use work authorization numbers as well as the more general RWP number. This allowed the licensee to track specific job exposure information.

In conjunction with guidance provided by the Electric Power Research Institute, the ALARA group was evaluating the results of crud bursts performed recently. The results of the evaluation will aid in determining future policy concerning the control of in-plant radiation levels. The licensee's ALARA efforts also include the evaluation of such techniques as the use of elevated pH, elevated lithium, and ultrafiltration.

The ALARA group had amassed a data base consisting of information on radiation doses regarding specific work activities gathered from 10 other power reactors. The information was classified by system for easy reference.

The goal for the current refueling outage of Unit 1 was set at 100 person-rem. As of May 16, 1990, with the outage nearing completion, the licensee had accumulated approximately 52 person-rem and was predicting a final total well under the goal.

The ALARA coordinator identified a problem affecting person-rem estimates which was evidently brought about by a lack of adequate communication. Total person-hour (and subsequently person-rem) estimates were low for some items of work because support organizations failed to provide estimates for their personnel, thinking that the lead organization had supplied totals for all work. HP personnel communicated this to the managers of the various organizations and it will be addressed in the next ALARA report.

No violations or deviations were identified.

#### 8. Exit Meeting

The inspector met with the resident inspector and the licensee's representatives denoted in paragraph 1 at the conclusion of the inspection on May 17, 1990, and summarized the scope and findings of the inspection as presented in this report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspector during the inspection.