

T/C

# The Light company

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September 4, 1980  
ST-HL-AE-524  
SFN: V-0530

Mr. Karl Seyfrit  
Director, Region IV  
Nuclear Regulatory Commission  
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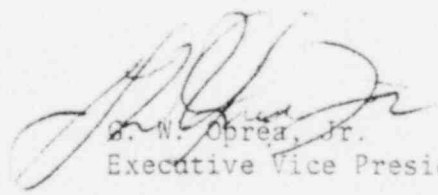
Dear Mr. Seyfrit:

South Texas Project  
Units 1&2  
Docket Nos. STN 50-498, STN 50-499  
Final Report Concerning the Quality  
Program for Concrete Placement CII-W90

On June 4, 1980, pursuant to 10CFR50.55(e), Houston Lighting & Power Company notified your office of a deficiency concerning a breakdown in the quality program for concrete placement CII-W90 (Steam Generator Secondary Shield Wall in the Unit 1 Reactor Containment Building). Interim reports on this subject were submitted to your office on July 3, 1980 (ST-HL-AE-492) and August 1, 1980 (ST-HL-AE-504). This report constitutes a final report on this deficiency.

If there are any questions, please contact Mr. Michael E. Powell at (713) 676-8592.

Very truly yours,

  
G. W. Oprea, Jr.  
Executive Vice President

MEP/ngb  
Attachments

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## ATTACHMENT 1

### Final Report Concerning the Quality Program for Concrete Placement CII-W90 September 3, 1980

#### DESCRIPTION OF DEFICIENCY

During a Brown & Root internal audit conducted from April 7-10, 1980 on concrete placement activities, an in-depth review was performed on all activities and documentation relating to concrete placement CII-W90 (placement made 10/29/79). This placement was randomly selected by the auditors as representative of a complex safety-related concrete pour during late 1979. The findings of this audit, as documented in Brown & Root Audit Deficiency Report (ADR) ST-36.7, raised numerous questions concerning Brown & Root meeting their specification and procedural requirements for pre-placement, placement and post-placement documentation. The documentation for this placement, which was reviewed by the auditors, appeared inadequate to conclude that satisfactory consolidation was achieved in this placement. Proper vibrator spacing could not be obtained using internal vibrators during the placement thus internal vibration was replaced or supplemented by form vibration. The documentation appeared inconsistent regarding the acceptability of the vibration techniques actually employed for this placement. The auditors felt that the failure to meet the specification and procedural documentation requirements indicated a breakdown in the quality program which caused the physical quality of concrete placement CII-W90 to be indeterminate until proven otherwise.

#### SAFETY EVALUATION

In lieu of attempting to perform a safety evaluation on an indeterminate deficiency, this placement was identified to the Brown & Root Task Force for Concrete Verification (NRC Order to Show Cause, Item 3.b). As described in the Concrete Verification Program - Status Report dated August 15, 1980 (ST-HL-AE-513), the Task Force investigated this placement using visual inspection and Ultrasonic Testing. The Task Force investigated placement CII-W90 for underconsolidation in the area of the 42 inch diameter pipe sleeve, under the embedded plates in the top of the wall, and in the area where form vibrators were used during the placement. The Consultant Panel and the Task Force have determined from their inspections and testing that the placement is structurally sound.

#### CORRECTIVE ACTION

Since no physical defect has been identified in the placement, no corrective action is required concerning the structural integrity of the placement. Corrective action concerning specification and procedural requirements for pre-placement, placement and post-placement documentation has been addressed under "Recurrence Control".

ATTACHMENT 1 (Cont.)

RECURRENCE CONTROL

Improvements for the concrete placement program have recently been identified to the NRC (see Attachment 2, HL&P Response to Items of Non-compliance, dated May 23, 1980, Item A-7 Concrete Placement Activities; and Attachment 3, HL&P Response to Order to Show Cause, dated July 28, 1980, page 12, Complex Concrete Placement). These improvements will assure against recurrence of a similar concrete placement problem.

\*ITEM A-7 Concrete Placement Activities

A. Summary

Concrete placement activities problems previously identified had not been corrected in accordance with prior commitments. These continuing problems involved proper consolidation practices, poor lighting, lack of adequate numbers of inspection personnel, production pressures and excessive lift thicknesses. These are matters previously identified as placement problems and, contrary to prior commitments, corrective action has not been incorporated into concrete placement procedures.

B. Reply

(1) Affirmation or Denial

The item of noncompliance is substantiated.

(2) Reason for the item of noncompliance

Analysis of this noncompliance shows that the problems identified above are a result of insufficient training, unsatisfactory procedures and production pressures.

(3) Corrective action to date and results achieved

The following corrective actions have been taken:

a. Production Pressure - Additional QC inspectors

have been added to the Quality Control Staff to assure that

\* This has been extracted from the May 23, 1980 letter from G. W. Oprea to Victor Stello, "HL&P's Response to Items of Non-compliance."

preplacement inspections are conducted in a thorough manner. Procedures have been revised to require the completion of preplacement inspection and sign off of the pour card by the B&R QC inspector prior to the delivery of concrete to the construction area. Other measures described in the response to Item 1, above, have been taken to eliminate the production pressures which might be perceived by the QC staff.

b. Inadequate lighting - Construction procedure CCP-4 has been revised to add placement lighting to the preplacement/placement checklist. This requirement is applicable to all safety-related pours.

c. Reinspection - Revisions to Site Procedures A040KPCCP-3, 4, 8, 12, 19 have been made which instruct the inspector that after he has inspected and accepted an item, if additional activity should occur in that area that would make quality of that item indeterminate or unacceptable, he shall reinspect that item and document his results on the applicable examination check.

d. Supervision - Placement foremen, field engineers and QC inspectors have been reinstructed on their obligation to identify any improper consolidation practices and to ensure that the placement receives proper consolidation.

e. Training - Procedure CCP-4 revised March 7, 1980, requires consolidation training every 90 days for consolidation placement craft. The most recent class was held April 18, 1980. These training classes emphasize consolidation procedures and ACI recommended practices.

f. Placement meetings - Construction procedure CCP-4 has been revised to require formal preplacement and postplacement meetings. The required agenda for preplacement meeting includes review and discussion of the specific placement method to be undertaken and the sequence of activities. The prescribed agenda for postplacement meetings includes discussion of all deviations from the placement as planned, including delays and required changes in the sequence of activities.

g. Procedures - Procedures are being rewritten in a new format with the involvement of the craft supervisors. These rewritten procedures will contain all relevant information from specifications, technical reference documents, codes, standards and regulatory documents. They are being written in such a way that they can be easily understood by



craft personnel. Technical terms are being replaced, whenever possible, by simpler terms or phrases.

(4) Corrective steps which will be taken to avoid further items of noncompliance

As noted above, a number of significant corrective actions have already been initiated. These efforts will continue throughout the duration of construction. Procedure CCP-4 will be revised by June 2, 1980, to reflect the requirement to discuss adherence to the specified lift thickness during each preplacement meeting. As improved methods of placing concrete are identified, they will be evaluated for incorporation into project construction procedures and training manuals.

(5) Date when full compliance will be achieved

Actions a. through f. in Section (3) above have already been accomplished. Action g. will be completed by July 21, 1980. The actions discussed in Section (4) will be an on-going project activity.

\* C. Complex Concrete Placement

1. Revision and reissuance of concrete placement procedures.
2. Training of personnel in the revised procedures. Specific complex placement provisions will be addressed in separate training sessions.
3. Construction, Engineering and QA management will review the results of the Unit 1 Reactor Containment Building Concrete Task Force investigation for impact on existing procedures and methods and will make modifications in these procedures and methods as necessary.
4. Assignment of complex pour coordinator from Construction to oversee complex concrete placement operations until such time as Construction management determines that performance is satisfactory.
5. Assignment of a complex pour coordinator from QA to oversee concrete placement inspection activity on these pours until QA management determines that QC performance is satisfactory.
6. Verification of the availability of qualified Pittsburgh Testing Laboratory concrete testing personnel.
7. Reconfirmation of the qualification and certification of QC inspection personnel.
8. Review of the concrete supplier's quality program to assure there are no unresolved quality program deficiencies.

\* This has been extracted from HL&P's Response to Order to Show Cause, dated July 28, 1980.

9. Reverification of the availability of adequate concrete placement equipment and personnel.

10. Resumption of complex concrete placement to begin with those pours already formed, proceeding from simpler to more difficult pours as follows:

- (a) North valve room walls and second shield  
EL -2' to +9'3" CI2 W24 - 160 cu. yds.
- (b) South HX walls  
EL -2' to +9'3" CI2 W22 - 208 cu. yds.
- (c) Southeast secondary shield wall  
EL -2' to +9'3" CI2 W23 - 40 cu. yds.
- (d) North valve room walls/slabs  
EL 61'3" to 68'0" CI1 S68 - 102 cu. yds.
- (e) Containment shell  
EL +53' to +63' CS2 W8 - 580 cu. yds.
- (f) Dome pour  
EL 150' to 155' CS1 W18 - 375 cu. yds.
- (g) North valve room walls and secondary shield walls .  
EL 9'3" to 16'0" CI2 W27 - 137 cu. yds.
- (h) Southeast exchange wall and secondary shield walls  
EL 9'3" to 16' CI2 W28 - 129 cu. yds.
- (i) Southeast secondary shield walls  
EL 9'3" to 16' CI2 W26 - 32 cu. yds.

11. Review of the quality of the placement and documentation of the work for conformance with requirements.

12. After the processes described in the above items have been completed, the complex concrete placement program will be expanded into other areas as additional personnel are qualified.

QA management will review the implementation of these steps to verify that the quality program is functioning properly. Resumption of the work will begin gradually, with specific QA management assurance that all procedures and

check lists are in place and the requisite number of qualified QC inspectors are available for each construction activity. Each step of the resumed work will be carefully monitored; and only after B&R & HL&P QA management and Construction management have assured themselves that the resumed construction activities are being done correctly, and the QA/QC system is working effectively, will the work in these activities be increased.