

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. 50-498/78-13; 50-499/78-13

Docket No. 50-498; 50-499

Category A2

Licensee: Houston Lighting & Power Company  
Post Office Box 1700  
Houston, Texas 77001

Facility Name: South Texas Project, Units 1 & 2

Meeting Held at: Houston, Texas

Meeting conducted: August 15, 1978

Inspection and  
Enforcement  
Personnel:

*W. C. Seidle*  
W. C. Seidle, Chief, Reactor Construction and  
Engineering Support Branch

8/23/78  
Date

*C. R. Oberg*  
for W. A. Crossman, Chief, Projects Section

8/23/78  
Date

*C. R. Oberg*  
for G. Hubacek, Reactor Inspector, Projects Section

8/23/78  
Date

Approved:

*C. R. Oberg*  
for W. A. Crossman, Chief, Projects Section

8/23/78  
Date

Inspection Summary:

Management Meeting on August 15, 1978 (Report No. 50-498/78-13; 50-499/78-13)  
Areas Discussed: Morale of site QA/QC personnel, alleged problems in implemen-  
tation of the site QA/QC civil program and adequacy of site QA/QC staffing.

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1. Persons ContactedLicensee Attendees

E. A. Turner, Vice President, Power Plant Construction & Technical Services  
W. H. Menger, General Manager, Power Plant Engineering and Construction  
D. G. Barker, Manager, Power Plant Construction Division  
W. N. Phillips, Projects QA Manager

IE Attendees

W. C. Seidle, Chief, RC&ES Branch, RIV  
W. A. Crossman, Chief, Projects Section, RIV  
W. G. Hubacek, Reactor Inspector, Projects Section, RIV

2. Purpose of Meeting

The purpose of the meeting was to express concern about the apparent low morale of some civil QA/QC personnel, to discuss alleged weaknesses in the implementation of the site civil QA/QC program, and to discuss the adequacy of the present QA/QC staffing level.

3. Matters Discussed

The senior IE representative expressed concern that the apparent low morale of some QA/QC civil personnel at the South Texas Project (STP) site could have adverse effects on the quality of safety related work. Specific manifestations of low morale included: the strong and sometimes outspoken dissension between a QC inspector and a QC supervisor; the feeling that QC inspectors are second class citizens on site as indicated by the less than acceptable gang boxes they are being provided; the feeling that nonconformance findings detected by QC inspectors are given less than adequate consideration; the feeling of several QC inspectors that the training being provided on recently revised procedures is inadequate and the general consensus among the QC inspectors that they are being pushed too hard and have little time for inspection preparation.

The senior IE representative also discussed alleged problems in the implementation of the STP site QA/QC civil program which were the subject of a recent IE investigation. The alleged program implementation problems identified during the meeting included: inadequate pre-pour inspections by craft foreman and field engineers which puts considerable pressure on QC inspectors to complete inspection activities for acceptance; inadequate

feedback to QC inspectors on disposition of their Nonconformance Reports (NCRs); the apparent unwillingness on the part of QC supervision to explain to QC inspectors why a NCR was not issued; the untimely distribution of current documents to the QC inspectors; the authorization of some field changes by telephone without a Field Request for Engineering Form (FREA) being subsequently issued; the lack of understanding by some QC inspectors on how to properly process a NCR form which is now required by the recently revised procedures; and the difficulty QC inspectors sometimes experience in obtaining technical assistance from their supervision. It was emphasized that, although none of the alleged problems were substantiated, they were considered by IE to be of sufficient importance to warrant this discussion of the investigation findings with the licensee.

Adequacy of site QA/QC staffing levels for both Houston Lighting and Power (HL&P) and Brown & Root (B&R) organizations was discussed. The senior IE representative pointed out that both the B&R QA/QC and HL&P organizations were below their projected staffing levels for the present status of the project by some twenty-one QA/QC personnel and two QA surveillance inspectors, respectively.

The licensee's enforcement history for STP was reviewed by the senior IE representative who pointed out that of twelve (12) items of non-compliance identified over a two year period, seven (7) involved failure to provide and/or adhere to procedures as required by Criterion V of 10 CFR Part 50, Appendix B.

The senior HL&P representative stated that the matters discussed during this meeting would be pursued by the licensee and that RIV would be informed of significant developments related to these matters.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

314 78-15

October 6, 1978

In Reply Refer To:

RIV  
Docket No. 50-498/Rpt. 78-15  
50-499/Rpt. 78-15

ST-AE-HL-568  
SFN: C-05701VED

OCT 10 1978

E. A. TURNER

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Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services  
Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

This refers to the investigation conducted by Messrs. R. E. Hall and A. B. Rosenberg of our staff during the period September 11-14, 1978, of activities authorized by NRC Construction Permit Nos. CPPR-128 and 129 for the South Texas Project facility, Units No. 1 and 2, concerning an allegation by a South Texas Project employee.

The investigation and our findings are discussed in the enclosed investigation report.

During the investigation, it was found that certain activities under your license appear to be in noncompliance with Appendix B to 10 CFR 50 of the NRC Regulations, "Quality Assurance Criteria for Nuclear Power Plants." The items of noncompliance and references to the pertinent requirements are identified in the enclosed Notice of Violation.

This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within 30 days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you, and the results achieved; (2) corrective steps which will be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

Three new unresolved items are identified in paragraphs 2.a, 2.m. and 3.a of the enclosed report.

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Houston Lighting and Power  
Company

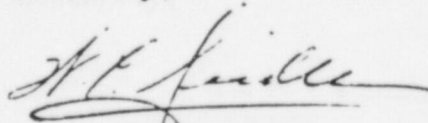
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October 6, 1978

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed investigation report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this investigation, we will be pleased to discuss them with you.

Sincerely,



W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. IE Investigation Report No. 50-498/78-15  
50-499/78-15

NOTICE OF VIOLATION

Based on results of the NRC investigation conducted on September 11-14, 1978, it appears that certain of your activities were not conducted in full compliance with Appendix B to 10 CFR 50 as indicated below:

A. Failure to Follow Cadweld Procedure

Criterion V of Appendix B requires that established instructions, procedures, or drawings be followed for all activities affecting quality.

Brown and Root Quality Construction Procedure No. A040KPCCP-11 requires that Cadweld rebar splices be fabricated in accordance with procedures specified in the Erico Products, Inc., manual entitled, "Cadweld Rebar Splicing," 1974.

Contrary to the above:

On September 12, 1978, during the second shift, it was observed by the IE inspectors that the Cadweld procedures specified in the Erico Products, Inc., manual were not being followed. Observed examples of failure to follow the Cadweld procedures are identified below:

1. Cadweld 54V47, located in the Unit 1 containment wall, was observed to have a piece of wire forced into the annular area between the rebar and sleeve such that it concealed a rejectable void. This practice is not included in the Cadweld procedure and could interfere with detection of the rejectable void.
2. Cadweld 54V49, also located in the Unit 1 containment wall, was observed to have been fabricated without centering (witness) marks having been scribed on the rebar before firing. Step 1 of the Cadweld procedure for vertical splicing requires these marks be made before firing to permit subsequent inspection.
3. Packing was improperly wrapped by Cadwelders 33 and 54 around the top of vertical Cadweld sleeves and tie-wire was used instead of prescribed end alignment clamps to retain the wrap. (An additional example involving Cadwelder 39 was noted on September 13.) Step 5 of the Cadweld procedure for vertical splicing defines a single wrap of packing instead of the two or three wraps observed and specifies use of the end alignment clamp.

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4. A butane torch was used to fire Cadweld 54V50 instead of the Flint Gun identified in step 8 of the Cadweld procedure for vertical splicing.

This is an infraction.

B. Failure to Provide Specified In-Process Inspection

Criterion X of Appendix B requires that a program for inspection of activities affecting quality be established and executed to verify conformance with instructions, procedures, and drawings.

Brown and Root Quality Construction Procedure A040KPCCP-11 specifies the requirement for surveillance of Cadwelding activities. Appendix A to this procedure defines a daily frequency for in-process Cadweld surveillance inspections.

Contrary to the above:

On September 12, 1978, the IE inspectors observed that no Quality Control Inspectors were assigned to perform in-process inspection of Cadweld splices being made on the second shift. Review of records for the period August 1 to September 10, 1978, and interviews with Brown & Root inspection personnel revealed that the requirement for daily surveillance inspections of in-process Cadweld activities had not been routinely satisfied for the second shift during this period.

This is an infraction.

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Docket No. 50-498; 50-499

Category A2

Licensee: Houston Lighting and Power Company  
Post Office Box 1700  
Houston, Texas 77001

Facility Name: South Texas Project, Units 1 and 2

Investigation at: South Texas Project, Matagorda County, Texas

Investigation conducted: September 11-14, 1978

Inspectors: *R. E. Hall*  
R. E. Hall, Chief, Engineering Support Section

10/6/78  
Date

*A. B. Rosenberg*  
A. B. Rosenberg, Reactor Inspector, Engineering  
Support Section

10/6/78  
Date

Reviewed: *W. G. Hubacek*  
W. G. Hubacek, Reactor Inspector, Projects Section

10/6/78  
Date

Approved: *R. E. Hall*  
R. E. Hall, Chief, Engineering Support Section

10/6/78  
Date

Investigation Summary:

Investigation on September 11-14, 1978 (Report No. 50-498/78-15; 50-499/78-15)

Areas Inspected: Special, unannounced investigation of allegations regarding nonconforming construction practices and insufficient quality control programs involved in Unit 1 construction; and a mislocation of the Unit 2 structure. The investigation involved fifty-two inspector-hours by two NRC inspectors;

Results: Investigation of the allegations resulted in two identified items of noncompliance (infraction - failure to follow Cadweld procedure - paragraph 2.h; and infraction - failure to provide specified in-process inspection - paragraph 2.i).

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INTRODUCTION

The South Texas Project, Units No. 1 and 2, are under construction in Matagorda County, Texas near the town of Wadsworth, Texas. Houston Lighting and Power Company is the Construction Permit holder. Brown and Root, Incorporated is both Architect Engineer and Constructor for the plant.

REASON FOR INVESTIGATION

The Region IV duty officer received a telephone call on September 9, 1978, from an STP employee who reported specific allegations regarding the STP Civil Construction and Quality Assurance programs.

SUMMARY OF FACTS

On September 9, 1978, the Region IV duty officer (Chief, Projects Section, Reactor Construction Branch) received a telephone call from an individual who identified himself as an employee at the South Texas Project. The employee wished to report irregularities in the Civil Construction and Quality Assurance programs at South Texas. The individual expressed the following specific allegations relating to the South Texas construction and Quality Assurance programs:

1. Cadweld location field sketch No. FSQ030 had been lost and was no longer available.
2. Two construction field sketches showing Cadweld locations, FSQ040 and FSQ041, contain Cadweld locations showing shot number and elevation but no coordinate number, or showing shot number and coordinate number but no elevation.
3. Excessive time of up to six weeks is taken to record shot numbers for Cadwelds on as-built drawings.
4. Cadweld locations are recorded by Construction rather than by Quality Control personnel.
5. Cadweld location field sketch FSQ034 shows Cadwelds at the wrong elevation and horizontally displaced by one rebar from actual installation.

6. Construction Site Procedure CCP-11 (Brown & Root Quality Construction Procedure AO40KPCCP-11) prohibits Cadwelder helpers from heating and cleaning bar ends preparatory to Cadweld splicing. Construction code ACI359 (Draft Division 2, ASME Section III) paragraph CC433.3 precludes unqualified helpers from doing any activity related to Cadwelding. It was alleged that personnel classed as helpers were cleaning and heating bar ends preparatory to Cadwelding.
7. Cadweld powder lots and sleeves are not traceable to the Cadweld location drawings as shown on FSQs. Issuance of multiple lots of powder to individual Cadwelders is now permitted.
8. Centering marks on rebar are made after firing of Cadwelds in violation of Cadwelding procedures.
9. Back shift inspections of Cadwelding operations are not being made; therefore, twenty-five to thirty shots per Cadwelder are made as compared with four to five shots per Cadwelder on the day shift when QC coverage is available.
10. Only three Quality Control Civil inspectors do Cadweld inspections.
11. Brown & Root foremen can neither read nor write.
12. Cadweld operations are proceeding in wet weather in violation of procedure.
13. The Unit No. 2 Containment, the Mechanical Electrical Auxiliary, and the Fuel Handling Buildings are mislocated by one foot from the position shown on design drawings.

#### CONCLUSIONS

1. The allegation regarding the loss of field sketch FSQ030 was confirmed. Houston Lighting & Power Company has initiated action to identify the significance of the missing data and the impact upon the records required for the South Texas Project. This item has been identified as an unresolved item.
2. The allegation concerning insufficient identifiers for Cadweld locations on drawings FSQ040 and FSQ041 could not be substantiated. Records review and print review confirmed that descriptions of Cadweld locations were sufficient to specifically identify Cadweld locations.

3. The allegation regarding excessive time to record data on as-built drawings could not be substantiated. Cadweld locations for an in-process placement were reviewed and found to be complete and sufficient to support that concrete placement.
4. The allegation regarding use of Construction personnel instead of Quality Control personnel to record Cadweld locations could neither be proven nor disproven since all data sheets reviewed had been completed by Quality Control personnel.
5. The allegation concerning mislocation of Cadwelds on FSQ034 was not substantiated. Physical inspection of Cadweld location revealed that installed Cadwelds were in agreement with record copies of FSQ034 within specified construction tolerances.
6. The allegation regarding helpers performing activities in nonconformance with established procedures could not be substantiated. Procedures in use and regulatory requirements do not preclude helpers from cleaning and heating bar ends preparatory to Cadweld firing.
7. The allegation regarding loss of traceability of Cadweld powder and sleeve lots as a result of a procedure change could not be substantiated. Records are maintained of lot numbers and sleeve numbers utilized in each Cadweld. It was confirmed that a procedure change had been recently made which permitted issuance of multiple lots of material to a given Cadwelder; however, this is not inconsistent with applicable regulatory requirements.
8. The allegation regarding application of centering marks to rebar after firing was substantiated by direct observation. Additional cases of failure to follow procedure with respect to Cadwelding operations were also identified. This item has been identified as an item of noncompliance.
9. The allegation regarding the lack of second shift Quality Control inspection coverage of Cadwelding operations was confirmed. The alleged difference in the rate of performance of Cadwelding operations between night shift and day shift, however, could not be substantiated. Lack of second shift Quality Control inspection has been identified as an item of noncompliance.
10. The allegation regarding the fact that only three Cadweld inspectors are available for all Cadweld inspection was confirmed.
11. The allegation regarding the inability of Brown & Root foremen to read or write was not inspected during this investigation. However, the matter of alleged communication problems will continue to be the subject of forthcoming inspections.

12. The allegation that Cadweld operations are proceeding in wet weather could neither be proven or disproven since weather conditions did not permit direct inspection in this regard.
13. The allegation regarding mislocation of Unit 2 structures was found to be an item under review by the licensee. At the time of the investigation, the licensee had not determined that it was reportable in accordance with 10 CFR 50.55(e); therefore, this item was identified as an unresolved item.

DETAILS1. Persons ContactedPrincipal Licensee Employees

- \*F. D. Asbeck, Construction Supervisor
- \*D. G. Barker, Manager, Construction
- \*R. A. Frazar, Manager, Quality Assurance
- M. M. Johnson, Senior Engineer
- \*H. L. Key, Project Manager
- D. G. Long, Lead Engineer
- \*W. M. Menger, Power Plant Engineering and Construction
- \*W. H. Morgan, Manager of Projects
- \*W. N. Phillips, Projects QA Manager
- \*T. D. Stanley, QA Supervisor
- \*S. A. Viaclovsky, Site QA Supervisor

Brown & Root Employees

- \*L. A. Ashley, Senior Construction Manager
- J. B. Cleere, Training Coordinator
- \*C. L. Crane, Project General Manager
- \*T. H. Gamon, Quality Assurance Manager
- B. Hearitige, Night Building Superintendent
- \*J. R. Monroe, Construction Project Manager
- \*H. Paperno, Assistant QA Manager
- \*J. Salvitti, Assistant Project Manager
- C. M. Singleton, Civil Inspector
- \*C. W. Vincent, Project QA Manager

The IE inspectors also interviewed other licensee and contractor employees including members of the QA/QC and engineering staffs.

\*denotes those attending the exit interview.

2. Investigation Detailsa. Allegation No. 1

Cadweld location field sketch No. FSQ030 had been lost and was no longer available.

Findings

Cadweld location field sketch No. FSQ030 was requested from the QC records vault. It was indicated as having been issued to a Brown & Root Quality Control inspector who is no longer

assigned to the project. The title identifier assigned by the quality records section was insufficient to identify the specific location for data which were to have been recorded on this field sketch drawing. Other drawings referenced in the tabular listing of field sketches covered similar identifiers but at specified elevations. It could not be determined by the IE inspectors whether or not FSQ030 had been, in fact, utilized by Quality Control to record Cadweld locations which were not recorded on other drawings. Further search by the licensee and Brown & Root Quality Control failed to locate FSQ030. The licensee issued speed letter C047 dated September 14, 1978, requesting that Brown & Root continue their search for the missing drawing and if it could not be located, then the specific area which would have been included on that drawing be identified. It was also requested that the significance of the missing data be defined. This item is identified as an unresolved item pending completion of the research initiated by the licensee's speed letter.

This allegation was confirmed.

b. Allegation No. 2

Two construction field sketches showing Cadweld locations, FSQ040 and FSQ041, contain Cadweld locations showing shot number and elevation but no coordinate number, or showing shot number and coordinate number but no elevation.

Findings

A review of field sketch FSQ040 and field sketch FSQ041 and comparison with the Brown & Root construction drawings confirmed that the location of all identified Cadwelds could be expressly determined based on available data. In one case, it was necessary to also reference a Field Request for Engineering Action (FREA), an intermediate engineering drawing; however, utilization of the FREA and the Brown & Root construction drawing permitted specific identification of Cadweld locations.

This allegation was not substantiated.

c. Allegation No. 3

Excessive time of up to six weeks is taken to record shot numbers for Cadwelds on as-built drawings.

Findings

Cadweld location records identified on FSQ034 and FSQ071 which were to be utilized for scheduled concrete placement CS W8A, E and G scheduled for September 13, 1978, were reviewed to determine if they had been completed in preparation for that concrete pour. It was verified that all records necessary to identify Cadweld locations within that pour had been completed on a timely basis preparatory to release by Quality Assurance of the pour card. A specific requirement of the pour card for complex placements requires that Construction, Engineering and Quality Control indicate their acceptance of Cadweld locations as specified on engineering drawings prior to release of the pour card for concrete placement.

This allegation could not be substantiated.

d. Allegation No. 4

Cadweld locations are recorded by Construction rather than by Quality Control personnel.

Findings

This allegation could neither be proven or disproven since data were not available to indicate that Construction forces have been utilized instead of Quality Control personnel to record Cadweld locations. All data sheets reviewed had apparently been completed by Quality Control inspectors. Since these data are recorded by the inspectors as a part of their verification activities, there were no records which would substantiate the improper use of Construction personnel to do quality verifications.

e. Allegation No. 5

Cadweld location field sketch FSQ034 shows Cadwelds at the wrong elevation and horizontally displaced by one rebar from actual installation.

Findings

This allegation can be considered in two parts:

- (1) The allegation was made that Cadwelds had been placed at a one inch elevation difference than that prescribed on drawings. It was alleged that no tolerances were specified

on the Brown & Root construction drawings. It was determined that an internal Brown & Root memorandum, GM-13351, dated July 15, 1975, had been issued previously which specified a plus or minus 3 inch tolerance on Cadweld splice location.

- (2) It was alleged that records showing Cadweld location on rebar in placement CS W8A, E and G were incorrect in that they showed the Cadwelds on the wrong reinforcing bars. Physical verification by the IE inspectors and comparison of installed Cadweld locations with formal records as shown on sketch FSQ034 confirmed that Cadweld locations were properly depicted on the field sketch.

This allegation could not be substantiated.

f. Allegation No. 6

Construction site procedure CCP-11 (Brown & Root Quality Construction Procedure A040KPCCP-11) prohibits Cadwelder helpers from heating bar ends and cleaning bar ends preparatory to Cadweld splicing. Construction code ACI359 (Draft Division 2, ASME Section III) paragraph CC433.3 precludes unqualified helpers from doing any activity related to Cadwelding. It was alleged that personnel classed as helpers were cleaning and heating bar ends preparatory to Cadwelding.

Findings

Review of Construction Quality Procedure CCP-11 and previous editions of Construction and Quality Assurance procedures covering Cadwelding operations did not identify any specific breakdown in work that could be assigned to Cadweld helpers. Review of the Erico Cadweld rebar splicing procedures indicated that, in fact, bar end preparation, cleaning and heating are not integral steps of the Cadweld procedure, but are preparatory steps. Since the qualified Cadwelder is responsible for assembly of the Cadweld and its firing, as well as final acceptance, use of helpers for preparatory steps does not appear inconsistent with procedure or with regulatory requirements.

This allegation could not be substantiated.

g. Allegation No. 7

Cadweld powder lots and sleeves are not traceable to the Cadweld location drawings as shown on FSQs. Issuance of multiple lots of powder to individual Cadwelders is not permitted.



It was verified that Revision 4 to procedure CCP-11 dated August 25, 1978, did, in fact, delete the following from paragraph 3.6.1; "Only one sleeve lot and one filler metal lot may be issued to a Cadwelder at any given time." However, paragraph 3.6.1 still states, "traceability of Cadweld material shall be verified by QC." Review of Cadweld material issue logs revealed that normally only one lot of sleeve or cartridge material is issued to a Cadwelder at a given time; however, there have been exceptions to that practice. No such exceptions occurred during the process of this investigation; however, discussions with the Cadweld material issue clerk indicated that when a lot of material is broken, i.e., more than one lot issued to a Cadwelder at one time, the individual bags of cartridge material or sleeves are marked with their material lot number. These data may then be recorded by the Cadwelder in his log and subsequently on Cadweld record logs. All records reviewed, both Cadwelder logs and Cadweld records, confirmed that lot numbers of cartridge material and sleeve material utilized are being recorded for each fabricated Cadweld splice.

This allegation was substantiated as stated; however, since no regulatory requirement has been compromised, this item is not considered to be in deviation with NRC requirements.

h. Allegation No. 8

Centering marks on rebar are made after firing of Cadwelds in violation of Cadwelding procedures.

Findings

Cadwelding operations on both the day and second shifts were observed by the IE inspectors. During observations on the second shift on September 12, 1978, the following specific deviations from Erico Cadweld procedures were noted:

- (1) Cadweld number 54-47 which had been fabricated on September 12, 1978, was observed to contain a piece of tie wire pressed into the annular gap between the rebar and Cadweld sleeve such that it concealed an unacceptable void in the filler material.

- (2) Packing wrappings being utilized for the top of the vertical Cadweld sleeves were being retained in place utilizing tie wire rather than the approved retaining clamp. This was observed for two Cadwelders (No. 54, 33).
- (3) It was observed that multiple wraps in excess of the 1-1/2 turns of packing material were being applied to the top annular area of Cadwelds being fabricated in the vertical orientation. It was subsequently determined that up to 2-1/2 turns is permissible by the Cadweld manufacturer; however, HL&P and Brown and Root procedures had not been modified to permit this increased number of wraps.
- (4) Cadweld Number 54V49 which had just been fabricated did not have witness centering marks as prescribed by procedure. Lack of these marks prior to firing makes it impossible to determine proper centering of the Cadweld sleeve on the rebar joint. A second case involving Cadwelder No. 33 was also observed in which the rebar had not been marked with centering marks prior to assembly of the Cadweld splice materials.
- (5) During fabrication of Cadweld No. 54V50, it was observed that the Cadwelder utilized a torch to fire the Cadweld rather than the prescribed Flint Gun.

This allegation was substantiated in that two instances were noted wherein centering marks had not been applied to the rebar prior to Cadweld fabrication or assembly. Additionally, other noted procedural discrepancies are considered to be an indication of failure to follow procedure. This is considered a violation of the requirements of Criterion V, Appendix B, 10 CFR 50 which requires that procedures be established and implemented for those activities affecting quality.

i. Allegation No. 9

Back shift inspections of Cadwelding operations are not being made; therefore, twenty-five to thirty shots per Cadwelder are made during the back shift as compared with four to five shots per Cadwelder on day shift when QC coverage is available.

Findings

This allegation may be considered in two parts:

- (1) The allegation that back shift inspection is not being made was substantiated. During the period when the inspectors

performed an investigation on the second shift on September 12, 1978, no Quality Control in-process inspection was observed for Cadwelding operations. Review of records and discussions with assigned Brown & Root Cadweld inspectors confirmed that during the period August 1 through September 10 essentially no second shift inspection of in-process Cadwelding operations had been performed. Appendix A to Brown & Root Quality Construction Procedure CCP-11 specifies that in-process inspection will be performed on a daily basis to inspect conformance with procedural requirements involved in Cadweld fabrication. This is considered an item of noncompliance with Criterion X, 10 CFR 50, Appendix B which specifies that a program for inspection of activities affecting quality shall be established and executed to verify conformance with the documented instructions, procedures and drawings for accomplishing an activity affecting quality.

- (2) The allegation that twenty-five to thirty Cadwelds are fabricated per Cadwelder on the second shift versus a rate of four to five per Cadwelder on day shift could not be substantiated. Records of Cadweld completion for four representative Cadwelders on day shift and swing shift were investigated and the rates were found to be comparable. This portion of this allegation was not substantiated.

j. Allegation No. 10

Only three Quality Control Civil inspectors do Cadweld inspections.

Findings

It was confirmed that, in fact, only three Brown & Root QC inspectors are involved in Cadweld inspection. This allegation, as stated, was substantiated; however, since the matter of Quality Control manpower loading had been discussed during a prior meeting between the Region IV and the licensee (Ref. letter dated August 25, 1978, W. C. Seidle to Houston Lighting & Power transmitting IE inspection report 50-498/78-13), this matter was not investigated any further.

k. Allegation No. 11

Brown & Root foremen can neither read nor write.

Findings

The matter of the ability of Brown & Root construction foremen to read or write was not investigated. It was confirmed by observation of the inspectors that the foremen were communicating

with their workers in an effective manner even though it was noted that language problems did exist. This allegation was neither substantiated nor refuted during the investigation. The matter of alleged communication problems will continue to be the subject of forthcoming inspections.

1. Allegation No. 12

Cadweld operations are proceeding in wet weather in violation of procedure.

Findings

During the investigation, weather conditions did not permit direct inspection of Cadwelding operations relative to wet or rainy weather. Discussions with Quality Control personnel and with Cadwelding personnel were insufficient to either confirm or deny this allegation. This allegation could neither be confirmed nor disproved.

m. Allegation No. 13

The Unit No. 2 Containment, the Mechanical Electrical Auxiliary, and the Fuel Handling Buildings are mislocated by one foot from the position shown on design drawings.

Findings

Discussions with the licensee by the IE inspectors confirmed that, in fact, an error in one dimension of the base mat for the Unit 2 Mechanical Electrical Auxiliary Building had been made; however, the reportability of this was being evaluated internally within the HL&P organization and a determination had not as yet been made. No general mislocation of other Unit 2 structures had been identified. This item is considered an unresolved item pending completion of the HL&P review to determine reportability in accordance with 10 CFR 50.55(e).

3. Other Areas of Concern

Incidental to the primary intent of this investigation, the following two areas were identified as being areas of concern by the IE inspectors:

- a. During review of Cadwelder qualification records, it was noted that the sequential Cadweld numbers 36H216 through 36H222, had been repeated and that Cadweld numbers 36V450 through 36V453 had not been utilized in sequence. This item was identified to the licensee for subsequent evaluation and follow up and is considered an unresolved item pending his determination of the proper sequencing of Cadweld numbers.

- b. During inspections of the various locations of the Unit 1 containment exterior wall, the containment interior work areas, and the Fuel Handling and Auxiliary Buildings, it was determined that a high percentage of fire extinguishers provided did not indicate a charged condition. On the exterior wall of the containment where Cadwelding operations were proceeding on a high cat-walk, it was observed that only one of four fire extinguishers indicated a fully charged condition. These findings were identified to the licensee and will be carried as an outstanding item for review during the next inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this investigation are discussed in paragraphs 2.a, 2.m and 3a.

5. Exit Interview

The IE inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the investigation on September 14, 1978. The IE inspectors summarized the purpose and scope of the investigation, reviewed the allegations and the findings, and discussed the items of noncompliance and unresolved items. The licensee representatives expressed concern over the observed lack of fire protection observed by the IE inspectors and indicated that corrective action will be taken in this regard. They further committed to pursuing the items identified as unresolved in this investigation.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

September 14, 1978

Docket No. 50-498  
50-499

ST-AE-HL-570  
SFN: C-0570

332  
RAF  
WAP yes  
TDS  
PDS

Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services  
Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

This refers to the telephone conversation with you and Mr. R. A. Frazar of your staff and Messrs. W. C. Seidle and W. A. Crossman of this office on September 13, 1978, related to Cadwelding activities at the South Texas Project site.

With regard to the September 13 telephone conversations, we understand that you have, or plan to:

1. Issue a stop-work order on a concrete placement scheduled for September 13 in the Unit 1 containment in the area of the equipment hatch, in that this area may include Cadweld splices that were improperly installed.
2. Conduct a thorough investigation of Cadweld splicing and inspection activities at the South Texas Project site.
3. Determine whether all safety related concrete placements should be stopped pending completion of your assessment of the Cadweld problems and the initiation of appropriate corrective action as deemed necessary.

If our understanding of your plans is inconsistent with the above, please contact this office immediately.

Sincerely,

*K. V. Seyfrit*  
K. V. Seyfrit  
Director

RECEIVED  
SEP 19 1978  
E. A. TURNER

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

333

78-16



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

November 15, 1978

*RA7*  
*Mr. Phillips*

In Reply Refer To:

RIV

Docket No. 50-498/Rpt. 78-16  
50-499/Rpt. 78-16

RECEIVED

NOV 20 1978

E. A. TURNER

ST-AE-HL-571

SFN: C-0570

*Hubacek*  
*38*

Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services  
Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

This refers to the inspection conducted by Mr. W. G. Hubacek and other members of our staff during the period October 24-27, 1978, of activities authorized by NRC Construction Permit Nos. CPPR-128 and 129 for South Texas Project, Units No. 1 and 2, and to the discussion of our findings with Mr. W. N. Phillips and other members of your staff at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspectors.

During the inspection, it was found that certain activities under your license appear to be in noncompliance with Appendix B to 10 CFR 50 of the NRC Regulations, "Quality Assurance Criteria for Nuclear Power Plants." The items of noncompliance and references to the pertinent requirements are identified in the enclosed Notice of Violation.

We have also examined actions you have taken with regard to previously identified inspection findings. The status of these items is identified in paragraph 2 of the enclosed report.

One new unresolved item is identified in paragraph 7 of the enclosed report.

*7901020132*  
*APP*

F-38

Houston Lighting & Power  
Company

-2-

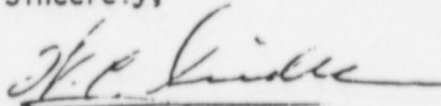
November 15, 1978

This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within 30 days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you, and the results achieved; (2) corrective steps which will be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosure:

IE Inspection Report No. 50-498/78-16  
50-499/78-16



Appendix A

NOTICE OF VIOLATION

Based on the results of the NRC inspection conducted on October 24-27, 1978, it appears that certain of your activities were not conducted in full compliance with the conditions of your NRC Construction Permit Nos. CPPR-128 and 129 as indicated below:

1. Failure to Provide Procedure for Housekeeping Inspection

10 CFR Part 50, Appendix B, Criterion V requires that activities affecting quality be prescribed by documented instructions or procedures appropriate to the circumstances.

Procedure GCP-4, "Housekeeping," Rev. 0 referenced Procedure QCP-2.3, "Housekeeping," which contained QA requirements for inspection of housekeeping.

Contrary to the above:

Procedure QCP-2.3 was recalled on July 17, 1978, and was not replaced until October 27, 1978. There was no procedure in effect during the interim period which prescribed QA inspection of housekeeping.

This is an infraction.

2. Failure to Provide Acceptance Criteria

10 CFR Part 50, Appendix B, Criterion V requires that procedures include appropriate quantitative and qualitative acceptance criteria for determining that important activities have been properly accomplished.

Contrary to the above:

It was determined by the IE inspector that the megger testing of Class IE motors was performed for the eight months preceding this inspection without acceptance criteria for determining that the readings obtained were acceptable. The licensee did not identify acceptance criteria for megger tests performed on Component Cooling Water pump motors Nos. 3R201NPA101A, B, C and 3R201NPA201A, B, C, as part of the warehouse maintenance program described in procedure MCP-3.

This is an infraction.

79-010201X2  
RFB

3. Failure to Follow Approved Procedures

10 CFR Part 50, Appendix B, Criterion V requires that activities affecting quality shall be accomplished in accordance with instructions and procedures developed for these activities.

B&R Procedure MCP-3, Rev. 3 of August 4, 1978, paragraph 3.1.2.2 and Appendix C, paragraphs IIa. thru d. requires 100% surveillance of maintenance on Class IE equipment and initials of QC personnel performing this surveillance on all the Warehouse Maintenance Cards.

Contrary to the above:

Review of the Warehouse Maintenance Cards for Component Cooling Water pump motors Nos. 3R201NPA101A, B, C and 3R201NPA201A, B, C revealed that QC surveillance had been performed on only 25% of the maintenance activities as evidenced by QC personnel initials on only 25% of the Warehouse Maintenance Cards. Licensee representatives acknowledged this to be the case.

This is an infraction.

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. 50-498/78-16; 50-499/78-16

Docket No. 50-498; 50-499

Category A2

Licensee: Houston Lighting and Power Company  
Post Office Box 1700  
Houston, Texas 77001

Facility Name: South Texas Project, Units 1 and 2

Inspection at: South Texas Project, Matagorda County, Texas

Inspection conducted: October 24-27, 1978

Inspectors:

*for* W. G. Hubacek  
W. G. Hubacek, Reactor Inspector, Projects  
Section (Paragraphs 1, 2, 3, 4, 5, 6, 8, 10 & 11)

11/15/78  
Date

J. I. Tapia  
J. I. Tapia, Reactor Inspector, Engineering  
Support Section (Paragraphs 2, 8 & 9)

11-15-78  
Date

J. I. Tapia for  
L. E. Martin, Reactor Inspector, Engineering  
Support Section (Paragraph 7)

11-15-78  
Date

Other  
Accompanying  
Personnel:

R. E. Hall, Chief, Engineering Support Section

Approved:

W. A. Crossman  
W. A. Crossman, Chief, Project Section

11/15/78  
Date

J. I. Tapia for  
R. E. Hall, Chief, Engineering Support Section

11-15-78  
Date

7901000139  
1488

Inspection Summary:

Inspection on October 24-27, 1978 (Report No. 50-498/78-16; 50-499/78-16)

Areas Inspected: Routine, unannounced inspection of construction activities including observation of work and review of records related to the essential cooling pond for Units 1 and 2; review of implementing procedures, observation of receipt and storage, and review of records related to electrical activities for Units 1 and 2; review of the site QA/QC program and staffing; review of reported 50.55(e) items; and review of previous inspection findings. The inspection involved seventy-two inspector-hours by three NRC inspectors.

Results: Of the five areas inspected, three apparent items of noncompliance were identified in two areas (infraction - failure to provide procedure for inspection of housekeeping - paragraph 6; infraction - failure to provide acceptance criteria - paragraph 7; and infraction - failure to follow approved procedures - paragraph 7).

DETAILS1. Persons ContactedPrincipal Licensee Employees

- \*F. D. Asbeck, Construction Supervisor
- \*W. N. Phillips, Projects QA Manager
- \*S. A. Viaclovsky, QA Supervisor
- \*D. G. Long, Lead Engineer
- \*L. D. Wilson, Lead Specialist
- \*M. H. Smith, QA Specialist

Other Personnel

- \*J. Salvitti, Construction Assistant Project Manager, Brown & Root (B&R)
- D. A. Robertson, Senior Geotechnical Field Engineer, B&R
- \*S. A. Rasnick, Construction Chief Engineer, B&R
- \*C. W. Vincent, Project QA Manager, B&R
- T. B. Schreeder, QC Supervisor, B&R
- R. Whiteaker, QC Receiving Supervisor, B&R
- J. B. Cleere, Training Coordinator, B&R
- G. T. Warnick, QA Supervisor, B&R
- R. J. Purdy, Turnover Supervisor, B&R
- J. Hamilton, Warehouse Maintenance Supervisor, B&R
- F. Williamson, Vendor Surveillance Specialist, B&R
- B. Jennings, Geotechnical Field Engineer, B&R
- S. Shah, QA Engineer, B&R
- J. R. Gebbardt, Essential Cooling Pond Assistant Resident Engineer, B&R

The IE inspectors also interviewed other licensee and contractor employees including members of the QA/QC and engineering staffs.

\*denotes those attending the exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item (50-498/78-03-1; 50-499/78-03-1): Ultrasonic Testing of Welds. A licensee memorandum dated September 21, 1978, released all Teledyne-Brown supports from their previous hold status. Documentation supporting the release was reviewed by the IE inspectors, including a Westinghouse evaluation of plate material separations detected in the area adjacent to the welds on column supports for the steam generators and reactor coolant pumps. A Fracture Analysis Report, which was discussed with the cognizant HL&P engineer, presents

the engineering evaluation of the severity of the flaws with respect to the structural integrity of the supports. The loading conditions presented in the report did not delineate between static and dynamic loads. The HL&P engineer indicated that the loads imposed in the analysis would be clarified. This item remains unresolved and will be reviewed during a subsequent inspection.

(Closed) Unresolved Item (50-498/78-10-2; 50-499/78-10-2): Concrete Materials Testing Requirements. This unresolved item involved Pittsburgh Testing Laboratory (PTL) concrete aggregate test reports showing different year ASTM testing standards and different acceptance criteria from those specified by the Brown & Root concrete supply specification. A detailed audit of all aggregate test records was performed by Brown & Root in order to determine the number and extent of these and similar errors and the effect of the errors on the results presented in the test reports. The results of the audit were reviewed by the IE inspector and discussed with a licensee representative. In all cases, the reported test results were within the values allowed by the correct acceptance criteria. Based on the audit results and controls initiated to preclude recurrence, this item is considered resolved.

### 3. Site Tour

The IE inspectors walked through various areas of the site to observe construction activities in progress and to inspect housekeeping and equipment storage. Accumulations of construction materials and trash were noted in the Unit 1 Containment and Fuel Handling Building areas and were discussed with licensee representatives.

No items of noncompliance or deviations were identified.

### 4. Site QA/QC Program

During discussions with licensee representatives, the IE inspector was informed of steps that had been taken to improve the effectiveness of the site QA/QC program in response to concerns identified by RIY representatives in a meeting with the licensee on August 15, 1978<sup>1/</sup>.

Additional personnel have been hired or obtained by transfer within B&R to fill vacancies in the QA/QC organization. An assistant to the Project QA Manager has been hired who will assume part of the

administrative burden and free the Project QA Manager for more direct participation in site QA/QC activities. Brown & Root is presently staffing for an increased second shift commitment which will comprise approximately 40% of the total construction effort. At the present time, approximately one hundred thirty-four QA/QC personnel are on board. Approximately ten QC personnel are assigned to the second shift. The IE inspectors observed that QC inspectors were present on the second shift.

Quality Control inspectors have received additional training related to the recently issued quality construction procedures. The IE inspector reviewed nine randomly selected personnel training files and observed that the training was documented in the files. An additional training coordinator has been requested to assist in the implementation of training requirements.

Procedure QCP-21, "Field Request for Engineering Action," Rev. 6, dated October 24, 1978, has been approved. Procedure QAP-2.6, "Nonconformances," was in the process of revision and was expected to be issued in approximately one week. The revisions to these procedures were expected to clarify previous questions concerning the use of Field Request for Engineering Action (FREAs) and Non-conformance Reports (NCRs) to resolve site identified quality related problems. NCRs are now documented on preprinted serialized forms and are being controlled to assure that all NCRs are being either issued or voided and records are maintained to indicate their disposition. The IE inspector observed that the preprinted forms were being utilized.

The QA library was staffed at the present authorized level of four positions. A licensee representative stated that there was no current backlog of documents for distribution to QA/QC personnel and that the QA library will begin using runners to distribute documents to field locations.

The IE inspector was also informed that twelve persons have been added to the staff of civil construction engineering and that a procedure will shortly be issued formalizing the use of punch lists to document discrepancies identified by construction and QC personnel.

No items of noncompliance or deviations were identified.

##### 5. Delay of Initial Operation

On October 9, 1978, HL&P announced that initial operation of the South Texas Project Nuclear Generating Station may be delayed up to two years. The delay was stated to be due to increased regulatory requirements and the project's complex design.

6. Review of Quality Construction Procedures

During review of Brown & Root General Construction Procedures (GCPs), the IE inspector observed that Section 5 of procedure GCP-4, "Housekeeping," Revision 0, referenced procedure QCP-2.3, "Housekeeping"; however, QCP-2.3 was recalled by B&R memorandum dated July 17, 1978. The IE inspector was informed by a licensee representative that QCP-2.3, which contains QA requirements for inspection of housekeeping, was not replaced by any other procedure during the period from July 17, 1978 to October 27, 1978.

The IE inspector informed the licensee that recall of procedure QCP-2.3 and subsequent failure to provide an adequate replacement for QCP-2.3 inspection requirements was in noncompliance with Criterion V of Appendix B to 10 CFR Part 50 which requires that activities affecting quality must be prescribed by documented instructions or procedures.

7. Class IE Cable and Electrical Equipment Receiving and Storage

The IE inspector reviewed the following procedures and records pertaining to the receiving, storage and maintenance of Class IE cable and electrical equipment:

Procedure A040KGCP-22, Rev. 9, "General Material Receiving and Storage," dated September 9, 1978

Procedure A040MCP-3, Rev. 3, "Handling, Storage, Installation, and Maintenance of Permanent Equipment, dated August 4, 1978

Procedure A040KPECP-4, Rev. 0, "Inspection of Terminal Lug Crimping Tools," dated December 13, 1976

Procedure A040KPECP-5, Rev. 0, "Inspection of Wire and Cable Strippers," dated December 13, 1976

Purchase Order (PO) Nos. 35-1197-4046, 35-1197-4058, 35-1197-4060, 35-1197-4022 and 35-1197-8022

Receiving Inspection Report Nos. 158, 692 and 765

Warehouse Maintenance Cards (WMC) for Component Cooling Water (CCW) Pump Motors PO 35-1197-4022 and 8022

Results of this review were:

- a. Review of procedures ECP-4 and ECP-5 revealed a lack of QA/QC surveillance or inspection responsibility in these two procedures. The activities described in these procedures are



activities that affect quality. 10 CFR Part 50, Appendix B, Criterion X requires that a program for inspection shall be established and examinations shall be performed to assure quality. At the present time, there is no work taking place or scheduled to take place under these procedures and the licensee advises that these procedures are now undergoing revision.

This item will be considered unresolved pending review of licensee actions during subsequent inspections.

- b. The IE inspector inspected the electrical cable storage area and the Class A and B storage areas for electrical equipment. Four reels of electrical cable and six Component Cooling Water pump motors were cross-checked against receiving records to ascertain that IE cables and equipment were properly identified and nonconforming equipment was separated and identified as being "On Hold."

No items of noncompliance or deviations were identified.

- c. The IE inspector reviewed PO No. 35-1197-4046, 4058, 4060, 4022, and 8022. Receiving records were complete and nonconforming items were indicated and documented with Nonconforming Reports (NCRs) and properly placed "On Hold." During the review, it was noted by the IE inspector that one vendor surveillance waiver form in PO 35-1197-8022 was not signed as approved. Further investigation proved this to be an isolated case. The licensee subsequently located the properly signed-off document, which was immediately placed in the record file.

No items of noncompliance or deviations were identified.

- d. The IE Inspector reviewed the Warehouse Maintenance Records for Component Cooling Water pump motors Nos. 3R201NPA101A, B, C and 3R201NPA201A, B, C as filed under PO Nos. 35-1197-4022 and 35-1197-8022, respectively. The IE inspector questioned the licensee's representative in charge of warehouse maintenance concerning acceptance criteria for megger testing of Class IE motors and lack of QC initials on WMC records. The representative was not aware of any acceptance criteria for megger testing and indicated that MCP-3 required QC review of WMC records. B&R site QC personnel stated that MCP-3 was not applicable to this area and that GCP-22 was the procedure for

the storage and maintenance of these motors. Further questioning of HL&P personnel proved that acceptance criteria for megger testing did not exist, but that draft procedure ECP-2 would provide these criteria. The licensee, however, was not aware prior to this inspection that these tests were being performed for a period of eight months without acceptance criteria. Further review of MCP-3 and GCP-22 by the IE inspector showed that both MCP-3 and GCP-22 were applicable to Class IE equipment with MCP-3 being the lead document, as indicated in MCP-3, Appendix C, paragraph II.a. thru d. MCP-3, paragraph 3.1.2.2 specifically requires the QC initials on the WMC and MCP-3, Appendix C, paragraph II requires 100% surveillance of warehouse maintenance of Class IE equipment. The licensee representatives acknowledged that the surveillance performed to date has been less than the 100% surveillance required.

Two items of noncompliance were identified as a result of this review of Work Maintenance Cards for PO No. 35-1197-4022 and 8022:

- (1) Failure to provide acceptance criteria for megger testing of Class IE motors. 10 CFR Part 50, Appendix B, Criterion V states in part that, "instructions, procedures ... shall include appropriate quantitative and qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."
- (2) Failure to follow prescribed procedures to assure proper sign-off of documentation and 100% surveillance of maintenance activities on Class IE equipment. 10 CFR Part 50, Appendix B, Criterion V requires that activities affecting quality shall be accomplished in accordance with these instructions, procedures and drawings.

8. Review of Items Reported Under 50.55(e)

a. Nonconforming Backfill Material

The IE inspector reviewed Brown & Root Nonconformance Report No. S-C1510 which identifies an approximately four feet thick layer of clay-gravel material (part of a former construction roadway ramp) which was inadvertently left in place beneath the, as yet to be built, Unit 2 Diesel Generator Building. The IE inspector observed coring operations undertaken to identify the exact extent of the contaminating material. The northern and eastern boundaries of the material have been identified as of this inspection. This item was subsequently reported as a deficiency under 10 CFR 50.55(e) and will be reviewed after disposition during a future inspection.

b. Containment Wall Voids

Brown & Root Nonconformance Report No. S-C1219-A identifies the results of a preliminary investigation of areas which contain visible voids between the Reactor Containment Building steel liner plate and the concrete of placement No. CS1-W15. Further investigation of the entire lift of concrete placed will be performed by the licensee to identify any additional void areas. The final results of all investigations performed to identify the actual extent of the voids and the corrective action taken to guarantee conformance with the design specifications will be reviewed following submission of the licensee's report required by 10 CFR 50.55(e).

c. Structural Steel Design Inadequacies

A licensee representative informed the IE inspector of a potential construction deficiency, reportable under 50.55(e), regarding inadequacies of structural steel located in the Unit 1 containment and the Unit 1 Mechanical-Electrical Auxiliary Building. Licensee engineering personnel, during design reviews, have determined that some structural steel connections and at least one structural steel beam do not meet project design requirements. This matter will be reviewed during future IE inspections.

9. Essential Cooling Pond

Implementing procedures for the inspection and construction of the essential cooling pond were reviewed for conformance with the quality assurance and design requirements presented in the specification. The Woodward-Clyde Consultants' procedure for geologic mapping and foundation verification was reviewed for implementation. An integral part of this procedure involves the results of Pittsburgh Testing Laboratory in-place density determinations. Six randomly selected test reports, dated July 6, 1978, through July 14, 1978, were reviewed by the IE inspector. One test report, dated July 6, 1978, presented the results of the liquid limit, plastic limit and plasticity index determinations which were also reviewed. As of this inspection, stripping is 90% complete and subgrade preparation is 70% complete.

No items of noncompliance or deviations were identified.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 7.

The IE inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on October 27, 1978. The IE inspectors summarized the purpose and the scope of the inspection and the findings. A licensee representative acknowledged the statements of the IE inspectors concerning the items of noncompliance and the unresolved item.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

347 78-17

December 21, 1978

RECEIVED

DEC 29 1978

In Reply Refer To:

RIV

Docket No. 50-498/Rpt. 78-17  
50-499/Rpt. 78-17

E. A. TURNER

~~RAF~~  
Mr. Phillips

ST-AE-HL-574  
SFN: C-0570

Hubacek

39

Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services  
Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

This refers to the inspection conducted by Messers. W. G. Hubacek and D. P. Tomlinson of our staff during the period December 5-8, 1978, of activities authorized by NRC Construction Permit Nos. CPPR-128 and 129 for South Texas Project, Units No. 1 and 2, and to the discussion of our findings with Mr. T. D. Stanley and other members of your staff at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspectors.

Within the scope of the inspection, no items of noncompliance were identified.

We have also examined actions you have taken with regard to previously identified inspection findings. The status of these items is identified in paragraph 2 of the enclosed report.

During the inspection, it was found that certain of your activities appeared to deviate from commitments in the PSAR. This item and references to the specific commitments are identified in the enclosed Notice of Deviation. Please provide us within 30 days, in writing, with your comments concerning this item, a description of any steps that have been or will be taken to correct it, a description of any steps that have been or will be taken to prevent recurrence, and the date all corrective actions or preventive measures were or will be completed.

~~7901250002~~  
JPP

F-39

Houston Lighting and Power  
Company

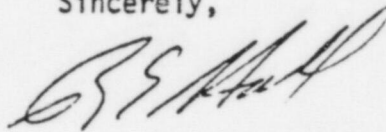
-2-

December 21, 1978

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



*for* W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosures:

1. Appendix A, Notice of Deviation
2. IE Inspection Report No. 50-498/78-17  
50-499/78-17

Appendix A

NOTICE OF DEVIATION

Based on the results of the NRC inspection conducted December 5-8, 1978, it appears that certain of your activities deviate from commitments made in your Preliminary Safety Analysis Report as indicated below:

Reporting of Cadwelder Qualification Inspection and Test Results  
by Level I Inspector

Section 3.8.1.2.4, "Summary of Plant Principal Specifications," of the South Texas Project PSAR states that applicable sections of the ASME-ACI-359 document are included in plant principal specifications in regard to construction techniques, examination and testing.

Article VII-4100 of the ASME-ACI-359 document states that Level II is the minimum level of capability allowed for personnel who report inspection and test results.

Contrary to the above:

Brown & Root Quality Assurance Department Cadwelder Qualification Reports for Cadwelders 42, 43, 47, 48, 49, 50 and 51, which were prepared in August and October 1978, were signed in the "Reported by" block by Level I QA inspectors.

This is a deviation.

~~7901250085~~  
18

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. 50-498/78-17; 50-499/78-17

Docket No. 50-498; 50-499

Category A2

Licensee: Houston Lighting & Power Company  
Post Office Box 1700  
Houston, Texas 77001

Facility Name: South Texas Project, Units 1 & 2

Inspection at: South Texas Project, Matagorda County, Texas

Inspection conducted: December 5-8, 1978

Inspectors: *W. G. Hubacek* 12/20/78  
W. G. Hubacek, Reactor Inspector, Projects Section  
(Paragraphs 1, 2, 3, 4, 5, 6, 7 & 9) Date

*D. P. Tomlinson* 12-20-78  
D. P. Tomlinson, Reactor Inspector, Engineering  
Support Section (Paragraph 8) Date

Approved: *R. A. Crossman* 12/20/78  
W. A. Crossman, Chief, Projects Section Date

*R. E. Hall* 12/20/78  
R. E. Hall, Chief, Engineering Support Section Date

790125/0090  
8PP



Inspection Summary:

Inspection on December 5-8, 1978 (Report No. 50-498/78-17; 50-499/78-17)

Areas Inspected: Routine, unannounced inspection of construction activities to include review of implementing procedures and records related to welding of safety related piping for Unit 1; observation of work related to concrete placement for Unit 1; review of licensee organization changes; review of reported 50.55(e) items; and review of previous inspection findings. The inspection involved forty-eight inspector-hours by two NRC inspectors.

Results: Of the five areas inspected, one apparent deviation from PSAR commitments was identified in one area (deviation - reporting of Cadwelder qualification inspection and test results by Level I inspectors - paragraph 6).

DETAILS1. Persons ContactedPrincipal Licensee Employees

R. A. Frazar, QA Manager  
W. N. Phillips, Projects QA Manager  
\*T. R. Alford, Site Manager  
\*T. D. Stanley, Project QA Supervisor  
\*L. D. Wilson, Site QA Supervisor  
\*D. G. Long, Lead Engineer  
\*T. J. Jordan, Lead Engineer  
\*M. H. Smith, Plant QA Supervisor  
M. W. Johnson, Senior Engineer  
D. C. Douglas, QA Specialist

Other Personnel

\*C. W. Vincent, Project QA Manager, Brown & Root (B&R)  
\*S. A. Rasnick, Construction Chief Engineer, B&R  
T. E. McNair, Quality Engineer, B&R  
T. Morse, Weld Technician Supervisor  
J. B. Cleere, Training Coordinator, B&R

The IE inspectors also interviewed other licensee and contractor employees including members of the QA/QC and engineering staffs.

\*denotes those attending the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (50-498/78-03-1; 50-499/78-03-1): Ultra-sonic Testing of Welds. Loading conditions used in the Westinghouse Fracture Analysis for steam generator and reactor coolant pump supports have been clarified by the licensee. It was determined that the critical tension load of the faulted condition in question was obtained by combining the SSE loads and LOCA loads. This matter is considered closed.

(Closed) Infraction (50-498/78-15-A; 50-499/78-15-A): Failure to Follow Cadweld Procedure. The IE inspector reviewed licensee actions taken in response to this finding including the following:

- a. Training related to Cadweld procedure requirements was provided to Cadwelders and QA inspectors.

- b. Procedure CCP-11, "Reinforcing Steel Mechanical Splicing (Cadwelds) was revised to permit omission of parts of the Cadweld apparatus where space limitations exist provided that the techniques used produce splices that meet visual inspection requirements. This procedure revision is supported by a letter from Erico Products, Inc., dated September 18, 1978, which is attached to the procedure.
- c. A total of 1247 Cadweld splices were visually inspected by B&R and licensee personnel. One Cadweld splice (56H31) failed to meet visual inspection acceptance criteria for allowable void and was removed and replaced.
- d. Twenty Cadweld splices produced by second shift Cadwelders, including splices 54V47 and 54V49, were cut out and pull-tested. All twenty splices met the pull-test acceptance criteria.
- e. Procedure CCP-11 was revised to permit the use of a torch, flint gun or other safe or appropriate means to ignite filler metal powder.
- f. Additional B&R QA inspectors have been assigned to perform surveillance of Cadweld splicing activities.
- g. The licensee has implemented increased surveillance of Cadweld splicing activities.

This matter is considered resolved.

(Closed) Infraction (50-498/78-15-B; 50-499/78-15-B): Failure to Provide Specified In-Process Inspection. Procedure CCP-11 has been revised to require that inspection and surveillance of Cadweld splicing activities be provided on each shift when Cadwelding is performed. Review of records for the period September 18, 1978 to December 5, 1978 revealed that Brown & Root inspection personnel and licensee surveillance personnel were present on the second shift. The IE inspectors observed that surveillance and inspection personnel were present during Cadweld splicing activities.

This matter is considered resolved.

### 3. Site Tour

The IE inspectors walked through various areas of the site to observe construction activities in progress and to inspect housekeeping and equipment storage.

No items of noncompliance or deviations were identified.

4. Organizational Changes

Effective November 1, 1978, Houston Lighting & Power Company announced the appointment of the Manager, South Texas Project who reports directly to the Vice President, Power Plant Construction and Technical Services. The Manager, South Texas Project has overall responsibility for the engineering, design, material and schedule control, construction, startup and resolution of technical and administrative issues related to the project as well as coordinator between Brown & Root and Houston Lighting & Power Company project management personnel.

The previous Power Plant Engineering & Construction Department organization has been changed and is now the Generation Engineering Department. The Generation Engineering Department no longer has a construction division or responsibility for South Texas Project construction management.

No items of noncompliance or deviations were identified.

5. Review of Items Reported Under 50.55(e)

a. Nonconforming Backfill Material

The IE inspector reviewed correspondence from Woodward-Clyde Consultants (WCC) dated November 3, 1978, discussing their evaluation of contaminated backfill in the Mechanical-Electrical Auxiliary Building area of Unit 2. Fifteen borings were drilled for the purpose of determining the extent of the contaminated backfill. Eight of the borings showed evidence of contaminated material from a construction ramp which was inadvertently left in the area. The contaminated backfill was encountered in thicknesses ranging from 1/4 to 4 ft. Two additional borings were drilled adjacent to previously drilled borings for the purpose of obtaining undisturbed samples. WCC's initial conclusion was that the compressibility of the contaminated backfill is very small. The final conclusion, as to the acceptability of the contaminated backfill, is dependent on the outcome of consolidation tests on the undisturbed samples.

This item will be reviewed during future IE inspections.

b. Structural Steel Design Inadequacies

The IE inspector was informed by a licensee representative that their civil engineering department has performed selective reviews of B&R concrete and structural steel design. No apparent problems have been identified with concrete design; however, discrepancies have been found in structural steel design. It was stated that procedures and documentation of design and design reviews appeared to be in order and that QA audits had failed to identify discrepancies; however, it appeared to the licensee that implementation of B&R design and design review procedures was faulty.

The licensee plans to make wide ranging reviews of all B&R design activities to determine if areas other than structural steel design have been affected.

This matter will be reviewed during future IE inspections.

6. Review of Cadweld Records

The IE inspector reviewed records related to Cadweld splicing to ascertain whether they were prepared and maintained in accordance with CCP-11 requirements and PSAR commitments. Records reviewed included "Cadwelder Qualification Reports" for Cadwelders No. 42, 43, 47, 48, 49, 50 and 51, which were prepared in August and October 1978. The IE inspector observed that the above reports document qualification tests which were witnessed and reported by certified Level I Cadweld inspectors.

The IE inspector pointed out that reporting of inspection and test results by a Level I inspector was contrary to requirements contained in the Proposed Standard Code for Concrete Reactor Vessels and Containments (ASME-ACI-359 document) which the licensee committed to in Section 3.8.1.2.4 of the STP PSAR. Article VII-4100 of the ASME-ACI-359 document states that Level II is the minimum level of capability permitted for reporting of inspection and test results.

7. Observation of Concrete Placement

The IE inspector observed the beginning of placement CSI-W15A consisting of approximately 140 cubic yards of mix design A1320 concrete. Concrete was conveyed by pump to the placement which was at the 15th lift of the Unit 1 containment wall. The IE inspector observed that

tests of samples taken from the first load delivered (batch ticket 23573) indicated the slump was 4-1/2 inches and air content was 4.8% which was within the limits in procedure CCP-4, "Concrete Placing and Finishing." Concrete was taken from the initial load for molding of compression test cylinders.

The IE inspector was informed that Field Request for Engineering Action No. 1-C-1030-3 was issued December 1, 1978, which allowed the field to bundle shear ties horizontally around the polar crane brackets to facilitate concrete placement and vibration.

No items of noncompliance or deviations were identified.

8. Review of Quality Assurance Implementing Procedures and Quality Records for Safety Related Piping

The IE inspector reviewed records for two welded joints on each of five safety related piping systems to ascertain whether these records met the established procedures and reflect work accomplishment consistent with NRC requirements and SAR commitments. Records of the following welded joints were selected for this inspection:

Essential Cooling Water System

EC-1102-WT-0002      ES-1202-WT-0003

Auxiliary Feed Water System

AF-1003-0005      AF-1001-0005

Safety Injection System

SI-1335-DB-0005      SI-1143-UB-0002

Spent Fuel Pool Cooling and Clean-Up System

FC-1201-UB-0003      FC-1101-UB-0003

Reactor Containment Cooling System

RC-1043-BB-0002      RC-1043-BB-0003

Actual viewing of these welded joints was not possible as they had been placed underground or embedded in concrete prior to this inspection. Three of the ten piping joints checked had been found defective and had been repaired. The ten original welds and the repairs had been made in accordance with Brown & Root approved Weld Procedure Specifications (WPS):

52.02-791 (Rev. 3)  
52.02-716 (Rev. 3)

52.02-715 (Rev. 4)  
52.02-626 (Rev. 4)

Personnel qualifications for the eight welders and six inspectors involved in making and inspecting these welds were also reviewed for adequacy and completeness and to assure that all qualifications and vision tests were current.

Records of weld material control were reviewed covering receipt verification, storage of material, pre-issue and post-issue control and disposition of unused materials. Two material storage and distribution sites (MDS-1 and the welder qualification and training center) were visited and observations made of the material issue and control system in operation. Calibration was also checked for all storage ovens, rebake oven, portable weld rod heaters and thermometers in these two storage and issue areas. In the areas inspected, no discrepancies with the requirements of SAR, Section 17 and Regulatory Guide 1.88 were noted.

No items of noncompliance or deviations were identified.

#### 9. Exit Interview

The IE inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 8, 1978. The IE inspectors summarized the purpose and the scope of the inspection and the findings. A licensee representative acknowledged the statements of the IE inspector concerning the deviation from commitments (paragraph 6).



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

358

January 9, 1979

~~to R.A.F.~~  
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Action  
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Distribution  
Owners Committee  
etc.

In Reply Refer To:

RIV  
Docket No. 50-498/Rpt. 78-18  
50-499/Rpt. 78-18

ST-AE-HL-576  
SFN: C-0570  
RECEIVED  
JAN 11 1979  
E. A. TURNER

Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services  
Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

This refers to the inspection conducted by Messers. W. G. Hubacek and W. A. Crossman of our staff during the period December 19-22, 1978, of activities authorized by NRC Construction Permit Nos. CPPR-128 and 129 for South Texas Project, Units No. 1 and 2, and to the discussion of our findings with Mr. F. G. White and other members of your staff at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspectors.

Within the scope of the inspection, no items of noncompliance were identified.

We have also examined actions you have taken with regard to previously identified inspection findings. The status of these items is identified in paragraph 2 of the enclosed report.

One new unresolved item is identified in paragraph 5 of the enclosed report.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be

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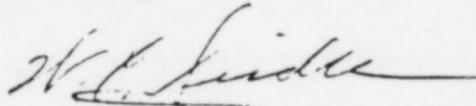
January 9, 1979

359

proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosure:

IE Inspection Report No. 50-498/78-18  
50-499/78-18

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
REGION IV

360

Report No. 50-498/78-18; 50-499/78-18

Docket No. 50-498; 50-499

Category A2

Licensee: Houston Lighting & Power Company  
Post Office Box 1700  
Houston, Texas 77001

Facility Name: South Texas Project, Units 1 & 2

Inspection at: South Texas Project, Matagorda County, Texas

Inspection conducted: December 19-22, 1978

Inspectors:

Walrossman  
for W. G. Hubacek, Reactor Inspector, Projects Section  
(Paragraphs 1, 2, 3, 4, 5, 7 & 8)

1/9/79  
Date

Walrossman  
W. A. Crossman, Chief, Projects Section  
(Paragraph 6)

1/9/79  
Date

Approved:

Walrossman  
W. A. Crossman, Chief, Projects Section

1/9/79  
Date

Inspection Summary:

Inspection on December 19-22, 1978 (Report No. 50-498/78-18; 50-499/78-18)

Areas Inspected: Routine, unannounced inspection of construction activities to include review of implementing procedures related to post tensioning activities for Units 1 and 2; observation of work related to concrete placement for Unit 1; observation of housekeeping and equipment storage for Units 1 and 2; and review of previous inspection findings. The inspection involved forty-eight inspector-hours by two NRC inspectors.

Results: No items of noncompliance or deviations were identified.

7903/40259  
SPP

DETAILS1. Persons ContactedPrincipal Licensee Employees

- \*T. R. Alford, Site Manager
- \*F. G. White, Senior Engineer
- \*L. D. Wilson, Site QA Supervisor
- \*F. D. Asbeck, Construction Supervisor
- \*D. J. Long, Lead Engineer
- \*T. J. Jordan, Lead Engineer

Other Personnel

- \*J. R. Monroe, Construction Project Manager, Brown & Root (B&R)
- \*S. A. Rasnick, Construction Chief Engineer, B&R
- \*C. W. Vincent, Project QA Manager, B&R
- \*G. T. Warnick, QA Supervisor, B&R
- T. B. Schreeder, QC Supervisor, B&R
- R. C. Taylor, Construction Chief Mechanical Engineer, B&R
- G. C. Cooper, Mechanical Engineer, B&R
- \*A. Smith, Supervisor, Construction Quality Engineering, B&R

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (50-498/78-15-2.a; 50-499/78-15-2.a): Missing Field Sketch FSQ 030. The IE inspector reviewed the B&R response to the licensee's speed letter C-047 relative to missing field sketch FSQ 030. It was determined by B&R that Cadwelds 28H31 through 28H44 were those that should have been recorded on FSQ 030; however, FSQ 030 was never initiated. B&R Civil QC has verified that the Cadwelds were satisfactory but could not verify their exact as-built locations. The approximate locations of the Cadwelds have been noted on Reactor Containment Building drawing 3-C-02-1-C-1545-4, Skt. 2 of 8, Rev. 4. Additional training in Cadwelding procedural requirements has been provided for craft and inspection personnel as well as increased surveillance of Cadwelding activities by QA/QC. This matter is considered resolved.

(Closed) Unresolved Item (50-498/78-15-3.a; 50-499/78-15-3.a): Improper Sequencing of Cadweld Numbers. The IE inspector observed that the Cadweld Material Log has been corrected and reflects the proper sequence for Cadweld numbers 36H216 through 36H222 and 36H450 through 36H453. The IE inspector also observed that, in addition to increased training of personnel and QA/QC surveillance of Cadweld activities, a comprehensive review of Cadweld records was in progress. This matter is considered resolved.

(Closed) Unresolved Item (50-498/78-15-3.m; 50-499/78-15-3.m): Unit 2 Mechanical Electrical Auxiliary Building Base Mat Dimensional Error. This matter was evaluated by the licensee and determined to be reportable in accordance with the requirements of 10 CFR 50.55(e); therefore, it is no longer considered an unresolved item. The future status of this matter will be reported in accordance with 10 CFR 50.55(e).

3. Site Tour

The IE inspectors walked through various areas of the site to observe construction activities in progress and to inspect housekeeping and equipment storage.

No items of noncompliance or deviations were identified.

4. Observations of Concrete Placment

The IE inspectors reviewed pour cards and observed work related to concrete placements ME1-S029, ME1-W004-01B and ME1-W025-12 which were placed monolithically. Mix B-1-3-11 was specified on the pour cards for these placements. Placement and consolidation techniques were observed.

No items of noncompliance or deviations were identified.

5. Storage of Permanent Plant Equipment

On December 20, 1978, the IE inspector observed storage of permanent plant equipment which was located in the Unit 1 Mechanical-Electrical Auxiliary Building (MEAB). It was noted that two charging pumps and one positive displacement pump were temporarily stored in the MEAB following their removal from the warehouse by construction personnel in preparation for installation in their permanent location in the MEAB.

The IE inspector observed that the floor of the MEAB area, where the equipment was stored, was wet from runoff of excess concrete curing water from nearby work areas. The pumps were covered with plastic sheeting which was draped over them and the heaters in the pump electrical motors were energized; however, the protection afforded by these measures against the extremely humid local environment in the MEAB storage area appeared to be marginal.

The IE inspector was informed that the licensee had issued a memorandum to B&R on December 19, 1978, directing B&R to take action to assure that adequate planning is performed to determine in-place storage requirements for equipment and that the requirements are implemented.

This matter is considered unresolved pending completion of B&R's response to the licensee memorandum and review by IE during a subsequent inspection.

## 6. Post-Tensioning Tendon System

The containment building post-tensioning utilizes the BBRV prestressing system supplied by the Prescon Corporation. The system is described in Section 3.8 of the Final Safety Analysis Report (FSAR).

### a. System Description

The post-tensioning system will utilize horizontal (hoop) tendons and long U-tendons each of which function as two verticals and a dome tendon.

The U-tendons provide prestressing of the cylindrical portion and the dome. These tendons are continuous over the dome and provide two-way tensioning beginning at 10° from the bottom of the hemispherical dome.

The horizontal tendons are continuous hoop tendons and prestress the cylindrical and dome portion of the containment. The hoop tendons are full girth, 360° tendons, both ends being anchored to the same buttress and bypassing intermediate buttresses. Successive hoop tendons are anchored 120° from each other. Hoop tendons begin at a point 7'9" above the top of the base mat and extend up to a point 45° on the hemispherical dome.

The tendons proper are composed of 186 stress-relieved, high strength wires 1/4" in diameter. The minimum ultimate strength of the wire is 240,000 psi with a minimum yield strength of greater than or equal to 85% of the minimum ultimate strength.

No items of noncompliance or deviations were identified.

### b. Applicable Codes, Standards and Specifications

The basic code used in design, fabrication and installation of the post-tensioning tendon system is Section III, Division 2 of

the ASME/ACI Code (ACI-359), "Proposed Standard Code for Concrete Reactor Vessels and Containments," 1973 including Addenda 1 through 6.

Other applicable codes and regulations include Regulatory Guide 1.103, "Post-tensioned Prestressing Systems of Concrete Reactor Vessels and Containments," Rev. 1, 10/76; Prestress Concrete Institute (PCI), "Tentative Specification for Post-tensioning Materials," PCI Journal, January-February 1971; and American Society for Testing and Materials (ASTM), E 328-72, "Stress-Relaxation Tests for Materials and Structures."

In addition to the above, applicable codes referenced in the FSAR for the materials were reviewed.

The IE inspector reviewed Revision E of Specification No. 2C239CS003, "Containment Post-tensioning System." Subsequent discussion with licensee representatives indicated that there would be revision to the Specification after evaluation of their review findings was completed. The IE inspector will review the final revision to this specification during a subsequent inspection.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 5.

8. Exit Interview

The IE inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 22, 1978. The IE inspectors summarized the purpose and the scope of the inspection and the findings. A licensee representative acknowledged statements of the IE inspector concerning the unresolved item.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

365

February 16, 1979

In Reply Refer To:

RIV

Docket No. 50-498/Rpt. 79-01

50-499/Rpt. 79-01

ST-AE-HL-00578  
SFN: C-0570

*RAF*  
*WNP*

*Hubacek*  
EXHIBIT NO. 41

Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services

Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

This refers to the investigation conducted by Mr. W. G. Hubacek and other members of our staff during the period January 23-26 and January 30 through February 2, 1979, of activities authorized by NRC Construction Permit Nos. CPPR-128 and 129 for the South Texas Project facility, Units No. 1 and 2, concerning an allegation by a former South Texas Project employee.

The investigation and our findings are discussed in the enclosed investigation report.

During the investigation, it was found that certain activities under your license appear to be in noncompliance with Appendix B to 10 CFR 50 of the NRC Regulations, "Quality Assurance Criteria for Nuclear Power Plants." The item of noncompliance and references to the pertinent requirements are identified in the enclosed Notice of Violation.

This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within 30 days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you, and the results achieved; (2) corrective steps which will be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

RECEIVED

FEB 21 1979

E. A. TURNER

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Houston Lighting and Power  
Company

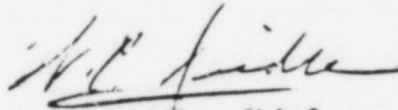
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February 16, 1979

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed investigation report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office, within 20 days of the date of this letter, requesting that such information be withheld from public disclosure. The application must include a full statement of the reasons why it is claimed that the information is proprietary. The application should be prepared so that any proprietary information identified is contained in an enclosure to the application, since the application without the enclosure will also be placed in the Public Document Room. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this investigation, we will be pleased to discuss them with you.

Sincerely,



W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. IE Investigation Report No. 50-498/79-01  
50-499/79-01



Appendix A

NOTICE OF VIOLATION

Based on results of the NRC investigation conducted on January 23-26 and January 30 through February 2, 1979, it appears that certain of your activities were not conducted in full compliance with the conditions of your NRC Construction Permits No. CPPR-128 and 129 as indicated below:

Failure to Provide Procedures for a Quality Control Activity

Criterion V of Appendix B to 10 CFR 50 requires that activities affecting quality be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances.

Contrary to the above:

Transcription of Cadwelding Examination Checklist records, an activity affecting quality, was being performed without benefit of documented instructions, procedures, or drawings.

This is an infraction.

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U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

## REGION IV

Report No. 50-498/79-01; 50-499/79-01

Docket No. 50-498; 50-499

Category A2

Licensee: Houston Lighting and Power Company  
Post Office Box 1700  
Houston, Texas 77001

Facility Name: South Texas Project, Units 1 and 2

Investigation at: South Texas Project, Matagorda County, Texas

Investigation conducted: January 23-26 and January 30 - February 2, 1979

Inspectors:

*W. G. Hubacek*  
for W. G. Hubacek, Reactor Inspector, Projects Section  
(Paragraphs 1, 2 & 3)

2/13/79  
Date

*R. E. Hall*  
R. E. Hall, Chief, Engineering Support Section  
(Paragraph 2)

2/13/79  
Date

*John J. Ward*  
J. J. Ward, Investigation Specialist  
(Paragraph 2)

2/13/79  
Date

Approved:

*W. A. Crossman*  
W. A. Crossman, Chief, Projects Section

2/13/79  
Date

*R. E. Hall*  
R. E. Hall, Chief, Engineering Support Section

2/13/79  
Date

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Investigation Summary:

Investigation on January 23-26, 1979, and January 30 - February 2, 1979  
(Report No. 50-498/79-01; 50-499/79-01)

Areas Inspected: Special, unannounced investigation of allegations regarding nonconforming construction practices and insufficient quality control programs involved in construction at the South Texas Project. The investigation involved forty inspector-hours by three NRC inspectors.

Results: Investigation of the allegations resulted in one identified item of noncompliance (deficiency - failure to provide procedures for a quality control activity - paragraph 2.a).

INTRODUCTION

The South Texas Project, Units No. 1 and 2, are under construction in Matagorda County, Texas near the town of Wadsworth, Texas. Houston Lighting and Power Company is the Construction Permit holder. Brown and Root, Incorporated is both Architect Engineer and Constructor for the plant.

REASON FOR INVESTIGATION

The Region IV Chief, Projects Section, Reactor Construction Branch received telephone calls on January 13, 19 and 22, 1979, from an individual who alleged irregularities in the STP Civil Construction and Quality Assurance programs. Additional information concerning these allegations was received from the alleged on January 25, 1979.

SUMMARY OF FACTS

On January 13, 19 and 22, 1979, the Region IV Chief, Projects Section, Reactor Construction Branch received telephone calls from an individual who made allegations in regard to the South Texas Project. The alleged provided additional information concerning the allegations on January 25, 1979. The individual expressed the following specific allegations relating to the South Texas construction and Quality Assurance programs:

1. Original Cadweld Examination Checklists (ECs) prepared by field QC inspectors were being changed before sending the ECs to the document storage vault. The lead QC inspector has copied ECs over and written in the field inspector's initials.
2. Problems identified by field inspectors and identified on "dirty copies of ECs" are not transferred to record copies.
3. As-building of Cadweld location is behind schedule.
4. For Cadwelds identified as 51V181 and 32H687 to 32H698, there had been no preignition inspection performed; however, the records indicate that one was performed and that the field inspector's initials had been forged.

5. Cadweld records are all "screwed up" and there is much "whiting out" and signing off of ECs and as-built drawings.
6. Cadweld 27BV418 was accepted although QC inspection records indicated the existence of excess voids in the filler metal.

#### CONCLUSIONS

1. The allegation concerning copying over of Cadweld Examination Checklists (ECs) was substantiated. It was determined that the field inspector's initials were entered on the record copy of the EC by another person; however, in the absence of a procedure, the involved individual considered this to be an acceptable practice.
2. The allegation that problems identified on field copies were not always transferred to the record copy could not be substantiated.
3. The allegation regarding the timeliness of entering Cadweld locations on drawings could not be substantiated.
4. The allegation of falsified preignition inspections for specific Cadwelds could not be substantiated since record ECs did not indicate that preignition inspection had been performed for the specified Cadwelds.
5. The allegation regarding the quality of the EC records could not be substantiated since inspection of the records did not reveal unacceptable data recording practices.
6. The allegation that Cadweld 27BV418 was accepted even though it contained a void in excess of acceptance criteria requirements was substantiated; however, acceptance was based on an evaluation described in a Field Request for Engineering Action which is an accepted method of resolving such matters.

DETAILS1. Persons ContactedPrincipal Licensee Employees

- \*T. R. Alford, Site Manager
- +\*F. D. Asbeck, Construction Supervisor
- \*R. A. Frazar, Manager, Quality Assurance
- \*W. N. Phillips, Projects QA Manager
- +\*T. D. Stanley, QA Supervisor
- +\*L. D. Wilson, Site QA Supervisor
- +\*D. G. Long, Lead Engineer
- +\*T. J. Jordan, Lead Engineer
- +M. H. Smith, Plant QA Supervisor

Brown & Root Employees

- \*C. W. Vincent, Project QA Manager
- \*G. T. Warnick, Site QA Manager
- +R. Bass, Assistant to QA Manager
- +T. B. Schreeder, Site QC Supervisor
- +\*J. Salvitti, Assistant Project Manager
- +S. A. Rasnick, Construction Chief Engineer
- +\*A. Smith, Chief Construction Quality Engineer
- C. M. Singleton, Civil Inspector
- A. Hammons, Supervisor, Site Civil QC
- A. Schlaifer, Lead Cadweld Inspector
- G. Ewert, Internal Surveillance Supervisor
- J. Curci, QA Turnover Civil Records Specialist
- J. McFarland, Civil Quality Engineer
- J. Murphy, Civil Quality Engineer
- J. G. Zipen, Cadweld Inspector
- M. J. Ewald, Cadweld Inspector

The IE inspectors also interviewed other licensee and contractor employees including members of the QA/QC and engineering staffs.

- \*denotes those attending the exit interview on January 26, 1979.
- +denotes those attending the exit interview on February 2, 1979.

2. Investigation Details

The following specific allegations were investigated during this investigation. Resultant findings of the NRC Investigation Team are indicated below:

- a. Allegation: Original Cadweld Examination Checklists (ECs) prepared by field QC inspectors were being changed before sending the ECs to the document storage vault. The lead QC inspector has copied ECs over and written in the field inspector's initials.

Investigation Finding: The investigation team reviewed record copies of ECs for the period from November 1978, to January 8, 1979. Numerous cases of apparent inscribing of field inspector's initials by another person were noted; both in the "Inspected By" column and to a lesser degree in the "Plotted-FSQ By" column. Record copies of QC inspector initials were reviewed which likewise indicated that the noted initials were not always those of the field inspector whom they represented.

The investigation team interviewed the lead Cadweld inspector, who freely admitted that the ECs were frequently prepared by himself or other day shift personnel, based in some cases on "dirty copies" or "field notes" of the field inspector; and if the inspector was not immediately available, he would scribe the initials of the field inspector in the "Inspected By" column. He indicated in his opinion that the column was only an indication of "who did the inspection," and not an attestation to the performance of the indicated QC inspection.

It was determined that the use of the Examination Checklist (front page of the form only) was provided for in site procedure A040KPCCP-11, "Reinforcing Steel Mechanical Splicing (Cadwelds)"; however, a recent change to the form to record supporting information on Cadweld inspection on the reverse side of the EC has not as yet been covered procedurally. A draft of Brown and Root Site Work Instruction for Cadwelders, SWI-007-A, draft dated January 24, 1979, was reviewed. This procedure specifies in paragraph 1.5, item j that the Cadweld field inspector shall indicate "completion of the above items by initialing in the 'Inspected By' column for each Cadweld."

Inquiries by the NRC investigation team could not locate any other procedure which would have permitted the practice of entering the initials of other persons during the review process by persons other than the inspector. Likewise, no other procedure could be identified applicable to the records entered on the reverse of the EC forms.

Criterion V to Appendix B of 10 CFR 50 requires that quality related work activities be performed in accordance with written procedures. Since no such procedures were in effect governing the EC form completion (back side) and since this resulted in the above noted practice, this is considered an item of non-compliance.

This allegation was substantiated and resulted in the above noted item of noncompliance.

- b. Allegation: Problems identified by field inspectors and identified on "dirty copies of ECs" are not transferred to record copies.

Investigation Finding: The investigation team was initially informed by the lead Cadweld inspector that draft copies of ECs are not retained after record copies have been prepared. The team concluded that implementation of the above noted SWI-007-A would preclude the loss of data during transfer of field data to record copies of ECs since the individual inspector would attest to the record copy.

Subsequently, the licensee located draft copies of ECs referred to specifically in the allegation. An IE inspector compared record copies of the ECs (for November 7, 1978, and November 18, 1978) with existing draft copies of ECs with respect to allegations concerning one Cadweld that was accepted without a lower witness mark and another Cadweld that was initially rejected for lack of an identifying mark.

It was established in the case of the Cadweld without a lower witness mark that, due to extreme congestion of rebar in the area, it was impossible to apply a lower witness mark; however, the Cadweld inspector was informed of the situation by construction personnel and personally inspected the entire Cadwelding procedure from preparation to firing, and accepted the Cadweld on the basis of his inspection of preparation and the final inspection.

In the case of the Cadweld alleged to have been initially rejected for lack of an identifying mark, it was established by discussions with the Cadweld inspector and the lead Cadweld inspector that the Cadweld was initially rejected on November 7, 1978, for lack of an identification mark but was accepted on November 8, 1978, after the lead Cadweld inspector determined its identification by consulting with the Cadweld inspector and construction personnel who produced the Cadweld.



This allegation could not be substantiated in that approved procedures for acceptance of Cadwelds and resolution of inspector findings were followed.

- c. Allegation: As-building of Cadweld location is behind schedule.

Investigation Finding: ECs for the period up to two weeks before the investigation were found to be in the document control center. These ECs reflected Cadweld location verification by Brown & Root QC field inspectors. Later ECs observed in the field QC office were in the process of being completed; none observed predated the investigation by more than two weeks.

An in-progress concrete placement, C11-W45B, West Pressurizer Walls from +20' to +35'3", was also inspected. It was observed that FSQ-0076 was complete, indicating Cadweld locations within the placement.

This allegation could not be substantiated.

- d. Allegation: For Cadwelds identified as 51V181, and 32H687 to 32H698, there had been no preignition inspection performed; however, the records indicate that one was performed, and that the field inspectors' initials had been forged.

Investigation Finding: Review of ECs for the noted Cadwelds revealed that none had been indicated as having been inspected prior to firing. All record entries on the record copies of the ECs showed that each was noted as "N" (not inspected) in the prefiring column. Comparison of the initials showed that the field inspector identified had indicated his post firing inspection of the noted Cadwelds as required.

This allegation was not substantiated.

- e. Allegation: Cadweld records are all "screwed up" and there is much "whiting out" and signing off of ECs and as-built drawings.

Investigation Finding: Inspection of ECs from November 1978, to January 8, 1979, Cadweld qualification records for Cadwelders 5 and 32, and Cadweld qualification summary records failed to identify any problems of the type alluded to in the allegation.

This allegation could not be substantiated.

- f. Allegation: Cadweld 27BV418 was accepted although QC inspection records indicated the existence of excess void in the filler metal.

Investigation Finding: Discussions with cognizant licensee representatives revealed that Cadweld 27BV418 was initially rejected by a QC inspector due to excess void but was later accepted based on an evaluation documented in a Field Request for Engineering Action (FREA). The investigation team observed that a Cadweld inspection book dated March 22, 1978, indicated that Cadweld 27BV418 was rejected due to excess void in the sleeve end. An FREA requesting disposition of the Cadweld 27BV418 void stated that 27BV418 was a repair sleeve that was welded to previously rejected sleeve 14BV834 which was attached to the base liner plate of the Unit 2 Reactor Containment Building. The FREA, which was approved on March 28, 1978, stated that the recommended disposition, "accept as is," was acceptable.

This allegation was substantiated; however, acceptance of 27BV418 was based on an evaluation documented in an approved Field Request for Engineering Action, which is an accepted method of resolving such matters.

3. Exit Interview

The IE inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the investigation on January 16, 1979, and February 2, 1979. The IE inspectors summarized the purpose and scope of the investigation, reviewed the allegations and the findings, and discussed the item of noncompliance.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TEXAS 76011

*pat*  
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April 2, 1979

In Reply Refer To:

RIV

Docket No. 50-498/Rpt. 79-01

50-499/Rpt. 79-01

RECEIVED

APR 9 1979

ST-AE-HL-579

SFN: C-0570

E. A. TURNER

Houston Lighting and Power Company  
ATTN: Mr. E. A. Turner, Vice President  
Power Plant Construction and  
Technical Services

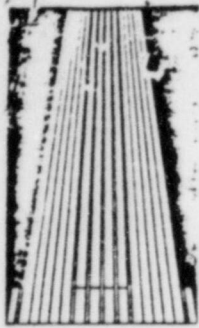
Post Office Box 1700  
Houston, Texas 77001

Gentlemen:

Thank you for your letter of March 12, 1979, in response to our letter dated February 16, 1979, and the attached Notice of Violation. We have no further questions at this time and we will review your corrective action during a future inspection.

W. C. Seidle, Chief  
Reactor Construction and  
Engineering Support Branch

79041-30040  
IP



# Houston Lighting & Power Company

Electric Tower  
P.O. Box 1700  
Houston, Texas 77001

March 12, 1979

ST-HL-AE-328  
SFN: C-0570

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RMS

Mr. W. C. Seidle, Chief  
Reactor Construction & Engineering  
Support Branch  
U.S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76012

SUBJECT: RESPONSE TO THE NRC INSPECTION FINDING  
SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION  
DOCKET NOS. 50-498/79-01 AND 50-499/79-01

Dear Mr. Seidle:

The following is Houston Lighting & Power Company's (HL&P) response to the infraction reported in IE Inspection Report Nos. 50-498/79-01 and 50-499/79-01 dated February 16, 1979.

Failure to Provide Procedures for a Quality Control Activity

1. Corrective Action Taken

Site Work Instruction 007-A (SWI) was issued February 5, 1979, to control the transcription of cadwelding examination checklist records. The SWI was implemented on February 7, 1979, after a two hour training session on the SWI was held.

2. Recurrence Control

To prevent future noncompliance, a new Cadwelding Inspection Report is being developed. This report will eliminate the need for the information on the backside of the Examination Checklist Form. The replacement form will be included as an illustration in the Cadwelding Quality Construction Procedure. Once incorporated in the Quality Control

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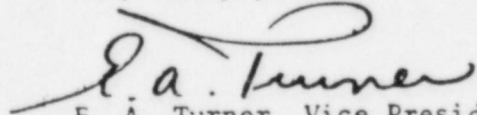
Mr. Seidle  
March 12, 1979  
Page Two

Procedures, the need for a separate SWI will have been eliminated.

The implementation of this new Cadwelding Inspection Report will be preceded by a training session and should be in effect by March 20, 1979.

Full compliance was achieved on February 7, 1979, and the recurrence control should be completed by March 20, 1979.

Very truly yours,



E. A. Turner, Vice President  
Power Plant Construction &  
Technical Services

EAT:rka

cc: Messrs. G. W. Oprea, Jr.  
R. A. Frazar  
D. G. Barker  
J. B. Poston (CPS)  
R. C. Mecke (CPS)  
R. L. Hancock (COA)  
H. L. Peterson (COA)  
M. L. Borchelt (CPL)  
J. W. Moore (CPL)  
C. W. Vincent (B&R)  
STP RMS