

UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20555

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APR 3 0 1980

Docket Nos. 50-498 50-499

> Houston Lighting and Power Company ATTN: Mr. G. W. Oprea, Jr. Executive Vice President P. O. Box 1700 Houston, Texas 77001

Gentlemen:

This refers to our special investigation of construction activities at the South Texas Project Units 1 and 2 which are authorized by NRC Construction Permit Nos. CPPR-128 and CPPR-129. Our investigation was separated into two parts:

- Investigation of current allegations relative to harassment, intimidation, and lack of support of quality control inspectors by QC management, and
- (2) Assessment of the effectiveness of the QA/QC program for ongoing activities.

This letter and the attached report address the results of our investigation which was conducted between November 10, 1979 and February 7, 1980.

Based on the results of our investigation, it appears that certain of your activities at South Texas Units 1 and 2 were not being conducted in compliance with NRC requirements as described in the enclosed Appendix A. These items of apparent noncompliance coupled with the substantiated allegations involving production pressure, lack of support by QC management, harassment, intimidation and threats directed toward QC inspectors indicate impairment of the quality assurance program at the South Texas Project. These problems were identified in connection with the quality assurance program of one of your principal contractors, Brown and Root, Incorporated.

Further, similar items of noncompliance and substantiated allegations of harassment and lack of support of QC personnel have been the subject of previous NRC correspondence with you and indicate that your past corrective action on these matters has been incomplete or ineffective. Although these problems have been to a great extent associated with Brown and Root quality assurance program implementation, as licensee you have prime responsibility for correction. The deficiencies in the Brown and Root program were so extensive that they should have been readily detected.

CERTIFIED MAIL RETURN RECEIPT REQUESTED Houston Light and Power Company

As you are aware, the enforcement actions available to the Commission in the exercise of its regulatory responsibilities include administrative actions in the form of written notices of violation, civil monetary penalties, and orders pertaining to the modification, suspension or revocation of a license.

After careful evaluation of the items of noncompliance identified in Appendix A, and other results of our investigation, this office, pursuant to the Commission's regulations in 10 CFR 2 and 50, hereby serves the enclosed Order to Show Cause on the Houston Lighting and Power Company.

In addition to the Order, we also are proposing civil penalties, for the items of noncompliance cited in Appendix A in the cumulative amount of One Hundred Thousand Dollars. Appendix B of this letter is the Notice of Proposed Imposition of Civil Penalties.

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, the enclosures, and your response to this letter will be placed in the NRC's Public Document Room.

Sincerely,

Victor Stello

Director Office of Inspection and Enforcement

Enclosures: Appendix A - Notice of Violation Appendix B - Notice of Proposed Imposition of Civil Penalties Appendix C - Cross References: Violations to Report Details Apendix D - Investigation Report 50-498/79-19; 50-499/79-19 Order to Show Cause

APR 3 0 1980

APPENDIX A NOTICE OF VIOLATION

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Houston Lighting and Power Company

Docket Nos.: 50-498 50-499

Based on the results of the NRC investigation conducted during the period November 10, 1979 through February 7, 1980, it appears that certain of your activities were not conducted in full compliance with the conditions of your NRC Construction Permits Nos. CPPR-128 and CPPR-129 as indicated below.

A. 10 CFR 50, Appendix B requires that licensees holding construction permits implement a quality assurance program meeting the criteria of Appendix B for all activities affecting the safety related functions of structures, systems, and components that prevent or mitigate the consequences of postulated accidents that cause undue risk to the health and safety of the public. Section 17 of the South Texas Plant Preliminary Safety Analysis Report sets forth the Quality Assurance Program developed by the licensee to implement Appendix B.

Contrary to the above, during the period of October 1979 through January 1980, the licensee was in continuous noncompliance with 10 CFR Part 50, Appendix B in that the licensee and Brown & Root (B&R), did not adequately control all activities affecting the safety related functions to assure that such activities were conducted in accordance with the Appendix B Criteria. This continuous noncompliance is evidenced by numerous examples* in the subject area of Criteria I, III, V, VI, IX, X, XV, XVI, XVII, and XVIII, as follows:

 10 CFR 50, Appendix B, Criterion I states in part, "The persons and organizations performing quality assurance functions shall have sufficient authority and organizational freedom to identify quality problems . . . including sufficient independence from cost and schedule...."

The South Texas Project (STP) Preliminary Safety Analysis Report (PSAR) in Section 17.1.1B (through Amendment 32, 10/17/75) states in part, "To assure the establishment and operation of the QA/Quality Control (QA) Program, B&R has an organization such that those performing the QA/QC functions have the freedom to identify quality problems, to provide means for obtaining solution to problems, and verify that solutions have been implemented. This organization has sufficient independence, authority and technical expertise to carry out the program in an efficient and effective manner. This is assured by B&R QA Management reporting to Management levels above and independent from pressures of production."

^{*}Some of the listed examples occurred outside the October-January time period for which a civil penalty is proposed. Such examples support the findings that similar occurrences were present during the period for which the civil penalty is proposed. Civil penalties are not being proposed for those examples.

Contrary to the above, the results of the investigation indicate that the quality assurance/quality control functions in the civil area are not sufficiently independent, the QA/QC civil personnel do not have sufficient authority and the QA/QC civil personnel do not have the freedom to identify problems and determine they are adequately resolved. The results of interviews indicate that some civil quality control inspectors are: (a) subjected to production pressures, (b) not always supported by the QC management, (c) harassed, (d) intimidated, and (e) threatened.

Documented evidence obtained during the investigation indicated a continuing trend on the part of civil quality control inspectors to assume the position that it is easier (less pressure, harassment, and threats) to just sign the quality control documents which are necessary for construction to proceed, even though the procedural or specification requirements may not have been fully met, than to be confronted by quality control and/or construction management. It is noted, however, that during the investigation no items of major safety significance were found which related to the above findings, but the potential for future problems is great unless corrective action is taken.

Examples supporting the above findings are as follows:

a. It was substantiated that during the final preparations for the placement of concrete in Lift #5 of the Unit 2 reactor containment building shell wall (placed 4/27/79) production pressure was present and caused a QCE supervisor to override the advice of his subordinates that the area of the construction joint was dirty. The corrective action selected, which was not totally effective, was that requiring the least delay in the construction schedule.

That the action was not fully effective was evidenced by a construction foreman who saw a can float to the surface of the concrete during placement. The QCE supervisor indicated that a large number of construction personnel, including construction top site management were standing by to begin the placement and that he signed off the necessary documents to get the placement underway due to the critical time frame for ordering concrete (Allegation 11A, p. 38).*

b. A former QCE supervisor stated that whenever construction falls behind in placing concrete, QC inspectors seem to always get the blame. The statement was made on the basis of his knowledge of what upper management expressed in meetings and general conversations. He also indicated that construction always

*Page numbers refer to Report No. 50-498/79-19; 50-499/79-19.

indicates they are ready for a placement when they are not and that QC had only 24 hours to complete the inspection. He noted that construction scheduling pressure gradually reduced this period (Individual A47, p. 3-26).

c. A current QCE supervisor related that after QC had completed a preplacement inspection, the pour card had been signed and the concrete ordered, the QC personnel would find additional problems such as alterations to the forms or debris dropped into the forms. This would occur from 3 to 24 hours after the sign off. Construction personnel would try to pressure inspectors to accept these conditions because of the time and money to correct the situation. He indicated that if construction personnel were unsuccessful and the placement was delayed or stopped, then it always seemed to be QC's fault. He also indicated that construction management has a major problem in that they think of quality only as a necessary evil and that there is much controversy over schedules and cost overruns (Individual A35, p. 3-14).

- d. A QC inspector stated that in the summer of 1979 he had discovered three horizontal reinforcing steel bars missing from a wall section which was being readied for concrete placement. On the previous day he had told construction personnel that he thought the wall preplacement was correct. He was verbally abused by a person from construction (Individual A17, p. 2-12).
- e. Fifteen of twenty-four QC civil inspectors interviewed executed signed sworn statements wherein they claimed that their supervisors had not supported their positions during confrontations with construction personnel. An additional QA auditor and an inspector on special assignment indicated the same concern. Interviews with the construction personnel involved resulted in signed sworn statements wherein they admitted ignoring and/or bypassing the QC inspector's directive to stop by continuing the work, and then going to the QC inspector's supervisor to reverse the directive (Allegation 6). This lack of QC management support is also evidenced by the findings resulting from Allegations 3, 7A, 8A, and 9A (pages 18, 14, 32, 33 and 34).

f. A QC inspector refused a sign off on deficient Cadwelds and initiated a nonconformance report (NCR) because Cadwelder requalification was not performed as required by the specification. The construction supervisor admitted he had ignored the QC inspector, the inspector's supervisor and the NCR and ordered his men to continue Cadwelding. This resulted from a disagreement over interpretation of the specification (Allegation 10A, p. 36).

- g. Five QC civil inspectors executed signed sworn statements wherein they claimed that during a meeting a high level QA/QC manager warned them not to talk to the NRC, indicating that action would follow. This was also confirmed by another QC civil inspector (Allegation 1, p. 12).
- h. Another QC civil inspector executed a signed sworn statement that a QC supervisor stated words to the effect that after the NRC leaves we will have to get rid of some of the QC inspectors. The QC supervisor acknowledged that he made such a statement in mid-November of 1979 (Allegation 4A, p. 29).
- i. Another QC civil inspector involved in an incident where the concrete foreman left the placement without informing the inspector who was the acting foreman was later faced with information that the concrete foreman had said his crew was able to violate the specification without the inspector's knowledge. The inspector was informer that the foreman was bragging about the incident (Allegation 8, p. 20).
- j. A QCE supervisor indicated that a person in construction attempted to harass the QA/QC program personnel by trying to remove air conditioning from the assigned office spaces (Individual A35, p. 3-14).
- k. A QC inspector admitted in a signed sworn statement he falsely signed concrete curing records at the request of a lead QC person when he had not inspected the curing and in fact was not on-site at the time the inspection was supposedly made. The lead QC person however, denied that such a request was made (Allegation 1A, p. 26).
- A QC inspector admitted in a signed sworn statement he signed off on a minor Cadweld deficiency (procedure violation) because he felt his supervisors would not support him and would side with construction (Individual A52). In this instance the QC inspector was intimidated by his past experience with his supervisor and took an action to correspond with his supervisor (p. 2-29).
- m. A QC inspector was physically threatened by a construction general foreman. The QC inspector, a witness and the construction general foreman all executed signed sworn statements substantiating this event. The construction general foreman indicated he lost his temper and intended no harm (Allegation 2A, p. 27).

- n. A QC inspector was physically threatened by a construction superintendent. Both executed signed sworn statements substantiating this event. The construction superintendent indicated he lost his temper and intended no harm (Allegation 3A, p. 28).
- o. A QC inspector was threatened by a construction general foreman. The QC inspector, a witness and the construction general foreman all executed signed sworn statements substantiating this event. A QCE supervisor in an interview also substantiated the threat. The construction general foreman explained that he lost his temper and made no attempt to injure the QC inspector (Allegation 2, p. 13).
- p. On January 4, 1980 a lecture by the Brown and Root Project QA Manager was given to the Brown and Root site QA/QC personnel and construction engineering and supervisory personnel. The lecture repeatedly overemphasized the Brown and Root QA/QC organization's responsibilities to minimize project cost and maintain the construction schedule. The lecture also strongly emphasized the fact that a Brown and Root QC inspector's decisions are subject to question, challenge and supervisory review and reversal. The lecture was recorded on video tape which continues to be used as a mechanism to project the Brown and Root policy. In addition, the contents of the lecture were put into printed form and widely distributed to employees of Brown and Root at the South Texas Project. (Appendix 5).
- 10 CFR 50, Appendix B, Criterion IX requires in part, "Measures shall be established to assure that special processes... are controlled and accomplished... using qualified procedures in accordance with... specifications, criteria and other special requirements."

The STP PSAR in Section 17.1.9A states in part that "Houston Lighting and Power Company (HL&P) requires written procedures and controls to ensure special processes... are accomplished... using qualified procedures in accordance with applicable... specifications, criteria, and other special requirements. These procedures shall describe the operations to be performed, sequence of operations, characteristics involved... examinations, tests and inspections shall be conducted to verify conformance to specified requirements... Compliance to these requirements is mandatory for prime contractors."

From information provided to the inspector it was determined that a "test fill program" resulted in the determination that for placement of an 18 inch maximum lift thickness of soil it would be necessary to make 12 passes with the compaction equipment.

Contrary to the above, Brown and Root construction procedure, STP-QCP A040KPCCP-2, Rev. 2, required only 8 passes with the compaction equipment for the placement of a maximum lift thickness of 18 inches of soil. Thus the construction procedure did not reflect the necessary number of passes of compaction equipment which had been established in a qualification test procedure (p.61).

3. 10 CFR 50, Appendix B, Criterion XVI requires in part, "Measures shall be established to assure that conditions adverse to quality, such as... defective... equipment... are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that... corrective action taken to preclude repetition."

The STP-PSAR in Section 17.1.16A states in part, "Houston Lighting and Power Company (HL&P) will require measures be established to assure conditions adverse to quality will be promptly... corrected... In the case of significant conditions adverse to quality, measures shall be taken to ensure the cause of the condition is determined and corrective action is implemented to preclude repetition."

The FSAR in Section 2.5.4.5.6.2.4 and Brown and Root Specification No. 3Y069YS029, Rev. F, paragraph 9.e, and Brown and Root Procedure No. A040KPCCP-2, paragraph 3.3.3.5 require that at least one relative density test be performed for every fourth field sand cone density test.

Contrary to the above, a review of Pittsburgh Testing Laboratory data on December 18, 1979, indicated that a relative density test had not been performed since November 17, 1979 as a result of equipment failure. Plant backfill continued to be placed and several sets of four field sand cone density tests were completed without the companion relative density tests being performed (p.64).

 CFR 50, Appendix B, Criterion V requires in part, "Activities affecting quality shall be prescribed by documented instructions, procedures... appropriate to the circumstances.

The STP PSAR in Section 17.1.5A states in part, "Appropriate requirements have been established in the Houston Lighting and Power Company (HL&P) Quality Assurance (QA) Program to ensure quality related activities for the South Texas Project (STP) are prescribed by documented instructions, procedures... the responsibility for development of these methods, procedures and instructions is delegated to the organization performing the activities... The HL&P QA Department has the responsibility for ensuring that methods, procedures and instructors (sic) are developed and implemented for all activities relating to the STP." Contrary to the above, Pittsburgh Testing Laboratory QA Procedure No. IS-S11-D1556-64 indicates that the in-place density measurements are to be performed according to EAASTM D-1556, however there are no requirements in the procedure which define the location or depth of the samples. A review of the records by the inspector revealed that the samples were taken at various depths in a given lift with no specific correlations of results available (p. 61).

5. 10 CFR 50, Appendix B, Criterion XVII requires in part, that "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

The STP PSAR in Section 17.1.17A states, in part that, "The STP QA Plan specifies:

 The records are required to be maintained to show evidence of performance of activities affecting quality. Typical records to be maintained include: . . . inspection and test reports. .

Paragraph 1.3.3.1 of B&R's Quality Construction Procedure CCP-2 states, "All inspection and laboratory testing will be conducted to assure compliance with all specifications . . . and the requirements of this Quality Construction procedure . . . The inspectors will document their findings . . ."

Contrary to the above, neither the applicable B&R procedure nor the test record form SF-6 required that the lift thickness and number of passes of the compaction equipment be documented.

These data are needed to assure that the backfill material is being systematically placed and compacted to obtain the required densities (p. 65).

6. 10 CFR Part 50, Appendix B, Criterion XVI states in part, "Measures shall be established to assure that conditions adverse to quality, such as failures, . . . deficiencies, deviations, . . . and nonconformances are properly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

The STP PSAR in Section 17.1.16A states in part, "The identification of a discrepancy or nonconformance requires certain steps to be taken to ensue proper closure of the item. The specific steps to be followed are as follows: 1...5. Verification (followup) by original identifier of discrepancy or noncomformance to ensure its implementation and action to preclude repetition or recurrence." Contrary to the above, no effective program has been implemented on a continuing basis to review and analyze Nonconformance Reports, Examination Checks/Inspection Books or Field Requests for Engineering Action for repetitive occurrences to ensure that root causes are identified and corrective action is taken to preclude repetition. Further, no formal, approved procedures to implement such a program had been developed as of November 28, 1979 (p. 94).

7. 10 CFR 50, Appendix B, Criterion XVI as implemented by South Texas Project PSAR Section 17.1.16, states in part, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, . . . are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition . . ."

An HL&P letter to the NPC, ST-HL-AE-374 dated August 31, 1979, pertaining to lifting the HL&P Stop-Work-Order for placement of containment shell concrete specified that the following measures had been implemented for all concrete placement:

- "Very detailed preplacement planning is carefully performed to identify potential consolidation problems . . ."
- "Increased attention is given to logistics to provide for backup equipment, access for inspection, lighting and manpower assignments . . ."
- 3) "Special additional training for Construction and Quality Control personnel is given to cover procedures for placement, vibration . . ."

Contrary to the above, work observed, statements by site personnel, quality assurance records and site internal surveillance reports show that the corrective actions outlined in HL&P letter ST-HL-AE-374 have not been effective to preclude repetition. Examples of this ineffectiveness are as follows (pages 53 and 54):

- Concrete placement personnel were using improper consolidation practices and lighting as observed by an NRC inspector was inadequate for placement CII-W81B made on November 20, 1979.
- Concrete placement personnel were using improper consolidation practices on placement DGI-MI made on December 7, 1979. Furthermore, an insufficient number of preplacement inspectors were assigned to conduct the final inspection.

Construction work in the placement area was being performed during the night prior to the placement and during the morning of the placement. This "last minute" construction activity, at least in part, delayed the start of the placement from the scheduled 7:00 a.m. until approximately 11:00 a.m. This scheduling resulted in undue pressure on the QC inspectors to quickly accept the placement conditions. No specific placement method (sequence) was specified in the placement plan or discussed in the preplacement meeting. In addition, the report of the post placement interview did not address the problems with last minute construction work or the loose reinforcing steel that delayed the start of the placement and was again identified after placement had begun.

- 3) Interviews with QC inspectors and notations on Inspection Books, Examination Checks, post placement interview reports and Site Internal Surveillance SIS-26 for placements ME1-S047, CS2-W7, ME2-W012-06, CI1-W81B and ME2-W001-04 indicate that poor consolidation practices and excessive lift thickness continue to be problems.
- 8. 10 CFR 50, Appendix B, Criterion V states in part, "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings... and shall be accomplished in accordance with these instructions, procedures or drawings."

10 CFR 50, Appendix B, Criterion V as implemented by the STP PSAR Section 17.1.5, states in part, "...quality related activities for the South Texas Project (STP) are prescribed by documented instructions, procedures or drawings; accomplished in accordance with such documents;..."

Brown & Root (B&R) Quality Assurance Personnel Training Manual Part 1, Supplement E, Section 5 specifies the required educational/ experience levels for Level I and II civil inspectors. For example, a Level II inspector with a degree from an accredited engineering or science college or university must have one year's experience in quality assurance, including testing or inspection, or both.

Pittsburgh Testing Laboratory (PTL) Quality Control Procedure No. QC-PQ-2, Appendices II and III specify the required educational/ experience levels for Level I, II and III PTL inspectors. These appendices identify the qualification requirements detailed in ANSI-N45.2.6 and ASME Section III, Division 2 respectively.

Contrary to the above, of 14 Brown & Root civil QC inspectors and six PTL concrete inspectors, for which qualification records were examined, five B&R and three PTL inspectors did not have the required applicable QA/QC experience at the time of their certification (p. 58). 9. 10 CFR 50, Appendix B, Criterion VI, states in part, "Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality"

The STP PSAR, in Section 17.1, states in part, "Brown and Root provides written procedures for controlling the preparation, review, approval, and issuance of specifications, drawings, procurement documents, procedures, instructions, and changes thereto, which delineate activities affecting quality."

Section 6, of the Contractors Quality Assurance Manual, states in part, "Documents used for the design, procurement, and construction of code and safety-related items shall be distributed and controlled in accordance with approved Project Procedures. ..."

Contrary to the above, the licensee's controlled copies (Nos. 04 and 05) of the Contractors Quality Assurance Manual on January 8, 1980 did not contain the latest issue of interim changes. Additionally, the licensee's controlled copy of the Contractors Weld Filler Material Specification, 1U020WS001-E, did not contain the latest document change notices (DCNs) (DCN/11/16/77 and DCN/3/28/78), (p. 69).

10. 10 CFR 50, Appendix B, Criterion IX, states in part, "Measures shall be established to assure that special processes, including welding . . ., are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications. . ."

Section 17 of the licensee's PSAR, titled "Control of Special Processes," states in part, ". . . written procedures and controls be prepared to ensure special processes, including welding, . . . are accomplished in accordance with applicable codes, standards, specifications, . . . "

ASME, B&PV Code 1974 through Winter 1975 Addenda, Section III, paragraph ND-4412, "Cleanliness and Protection of Welding Surfaces," states in part, ". . . the work shall be protected from deleterious contamination and from rain, snow and wind during welding . . ."

Contrary to the above, the inspector observed on at least three occasions safety-related pipe welding activities being performed without adequate protection from the atmospheric conditions described above. Subsequent examination of these welds showed that they had unacceptable defects. For example, the radiograph for field weld 0005 in line AF2004, made without adequate protection from the wind, which would cause loss of cover gas, showed high levels of oxidation (p. 72). 11. 10 CFR Part 50, Appendix B, Criterion IX, states in part, "Measures shall be established to assure that special processes, including . . nondestructive testing; are controlled and accomplished . . . in accordance with applicable codes, standards, specifications, criteria, and other special requirements."

Section 17 of the licensee's PSAR titled "Control of Special Processes" states in part, ". . . written procedures and controls be prepared to assure special processes, including . . . nondestructive testing . . . are accomplished . . . in accordance with applicable codes, standards and specifications . . . "

a. Paragraph T-233.2 of Section V of the ASME B&PV Code 1974 through Winter 1975 Addenda requires that all radiographs be free from mechanical, chemical, or other blemishes to the extent that they cannot mask or be confused with the image of any discontinuity, including; fogging, processing defects such as streaks, water marks, or chemical stains.

Contrary to the above, the inspector reviewed at least 50 final radiographs of production (field) welds and of welder qualification tests which displayed significant light fogging and chemical contamination to such an extent that proper interpretation of the radiograph was not possible in whole or in part (p. 79).

b. Paragraph T-290 of Section V of the ASME B&PV Code 1974 through Winter 1975 Addenda states in part, "... radiographs shall be examined and interpreted ... record on a review form accompanying the radiographs the interpretation of each radiograph and disposition of the material examined"

Contrary to the above, the inspector observed at least 12 radiographs of field welds and one radiograph for a welder performance qualification test weld which contained linear indications that had not been recorded on the accompanying interpretation sheet (p. 82).

c. ASME B&PV Code, 1974 through Winter 1975 Addenda Section III, Paragraph ND-5351, "Evaluation of Indications" specifies that any indication which is believed to be nonrelevant shall be regarded as a defect and shall be reexamined to verify whether or not actual defects are present. Surface conditioning may precede the reexamination.

The contractors Liquid Penetrant Examination procedure, ST-NDEP-4.1, reiterates the above requirements.

Contrary to the above, the inspector observed the performance of a liquid penetrant examination for field weld number 0017 in the essential cooling water system for which the results were not evaluated according to these requirements (p. 76).

12. 10 CFR 50, Appendix B, Criterion V requires in part, "Activities affecting quality shall be prescribed by documented instructions . . and shall be accomplished in accordance with these instructions,..."

The STP PSAR in Section 17.1.5B states in part, "Engineering, construction, inspection, testing, and planning techniques are used to assure that activities affecting quality are set forth by written B&R instructions, procedures and drawings, and are accomplished in accordance with these instructions, procedures and drawings."

Contrary to the above, on December 10, 1979, the inspector determined that an interim change ST-NDEP to ST-NDEP-4.1, "Liquid Penetrant Examination," was issued on August 30, 1979 and was inserted in the procedure and the applicable page of the procedure was removed. The interim procedure is valid for 60 days. The inspector observed that the invalid or cancelled insert was being used by B&R NDE personnel during January 1980. A similar example was observed relative to inserts for ST-NDEP-2.1, dated March 13, 1979. This appears to be a generic problem (p. 77).

13. 10 CFR 50, Appendix B, Criterion XVI states in part, "Measures shall be established to assure that conditions adverse to quality such as . . . deficiencies, deviations, . . . and nonconformances are promptly identified and corrected."

The STP FSAR states in Amendment 7 dated July 16, 1979 in Chapter 3, paragraph 3.8.1.6.3, "...:

a. Subparagraph CC-4333.3, Initial Qualification Tests, serves as an alternate to Section C.1 of Regulatory Guide 1.10, except that a splicer will be requalified if in any 15 consecutive Cadwelds there are two unacceptable (either visual or tensile) Cadwelds made. The splicer will be requalified in the position or positions in which the failure(s) occurred."

B&R Specification No. 2A010CS028-G "Concrete Construction" (applicable at the time in question) states in paragraph 5.3.3.6, "When a splicer accumulates two unacceptable tests, either visual or tensile, within a unit of 15 consecutive test samples and the rejections are not due to material deficiencies, he shall not be permitted to continue splicing until he has requalified according to paragraph 5.3.3.5."

Contrary to the above, five Cadwelders who had accumulated two visually unacceptable production splices within a unit of fifteen (15) consecutive splices were permitted to continue making production splices without regualifying (p. 37).

14. 10 CFR 50, Appendix B, Criterion XVI states in part, "Measures shall be established to assure that conditions adverse to quality, such as failures . . . deviations . . . and nonconformances are promptly identified and corrected. . . . the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management."

The STP PSAR in Section 17.1.16b states in part, "Should conditions exist that after a reasonable time for resolution, a deficiency or nonconformance is not corrected, the QA Manager is required to report the incident to the Power Division Senior Group Vice-President any time agreement on corrective actions to be implemented cannot be attained, the findings may be brought directly to the Power Division Senior Group Vice-President for resolution."

Contrary to the above, there was no objective evidence that the Division Senior Group Vice-President was advised of the failure to take action on repetitive deficiencies documented in B&R site surveillances SIS-12 and 12.1 through 12.5, nor the failure to get responses and/or corrective action on SIS-18 and the B&R letter 5153 dated November 12, 1979 (p. 106).

15. 10 CFR 50, Appendix B, Criterion V states in part, "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings... and shall be accomplished in accordance with these instructions, procedures or drawings."

10 CFR 50, Appendix B, Criterion V, as implemented by South Texas Project PSAR Section 17.1.5 states in part, "The HL&P QA Department has the responsibility for ensuring that methods, procedures and instructions are developed and implemented for all activities relating to STP."

HL&P Project Quality Procedures PSQC PC, Revision 1, and PSQP-A3, Revision 9, state in part, "All checklists shall be completed in full, signed and dated by the QA personnel involved, and filed in the site QA office. Should any items on the checklist not be applicable to the operation, that item shall be marked, NA. Items found to be satisfactory will be marked S. Items not audited shall be marked N. Any discrepant items or deviations from specifications shall be marked "U" and discussed in the "Remarks" section.

The QA surveillance personnel shall document all nonconformances and deficiencies according to PSQP-3.

Notification of Brown & Root Site QA: Whenever a discrepant item or condition for which B&R or a B&R subcontractor is responsible is identified by HL&P QA, Brown & Root site QA shall be notified immediately. The notification may be by one of the previously mentioned HL&P Discrepancy Notification Documents or orally. If immediate and acceptable action and recurrence control (as applicable) are implemented by B&R pursuant to oral notification the item may be closed out on the checklist itself if a checklist was used. <u>Reference should be made on the checklist as to the correc-</u> tive action."

Contrary to the above, civil surveillances C.2.1 through C.2.5 were not properly documented as required by the written procedures. That is, unsatisfactory conditions and corrective action were not always documented during the period of 1978 and 1979 (p. 103).

16. 10 CFR 50, Appendix B, Criterion XV requires in part, "Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use . . . "

The STP PSAR in Section 17.1.15B requires suppliers to establish and implement procedures for controlling items or processes that do not conform to requirements of the applicable codes or standards.

ASTM D-1586-67, identified by Houston Light and Power Company as the applicable standard for site soil penetration tests, states in paragraph 2.3, "The assembly shall consist of a 140 lb. weight."

Contrary to the above, site soil penetration testing activities were allowed to continue during the period January 28, 1980 to February 4, 1980 using a weight ("hammer") which had been identified as nonconforming to the requirements of ASTM D-1586-67 (p. 67).

17. 10 CFR 50, Appendix B, Criterion XI, requires in part, "Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used. ..."

The STP PSAR Section 17.0, paragraphs 17.1.11A and 17.1.11B states in part, "Houston Lighting and Power Company (HL&P) Quality Assurance (QA) Program requires prime contractors, subcontractors . . . designate appropriate tests to be performed at specific stages of . . . construction. Conduct of tests will be governed by written procedures which will incorporate requirements and acceptance limits . . . Tests will be conducted in accordance with these procedures . . .

"The prime contractors Brown & Root, Incorporated (B&R) . . . shall ensure all necessary tests are required and conducted. Such testing will be performed in accordance with quality assurance and engineering test procedures which incorporate . . . the test requirements . . . Test requirements . . . are provided by the organization responsible for the design of the item under test . . . "B&R engineering will establish the required test program . . . in appropriate specifications. The suppliers and B&R Construction are required to establish detailed procedures for the tests . . . The test procedures shall include provisions for assurance that the prerequisite for the test have been met, that adequate instrumentation is available and will be used . . ."

A Woodward-Lundgren document, dated August 1, 1975 entitled Appendix B-1 Revision 2, presented to the NRC on February 5, 1980 as the applicable QA procedure, states that split-spoon samples should be taken according to ASTM D-1586-67.

Paragraph 2.2 of ASTM D-1586 states, "The sampler shall be constructed with dimensions indicated on Figure 1. The drive shoe . . . shall be replaced . . . when it becomes dented or distorted." Figure 1 shows a 1.375 inch inside diameter of the split-spoon sampler cutting edge and a 0.75 inch taper.

Contrary to the above, the split-spoon used in the backfill test program during the period January 28, 1980 to February 5, 1980, did not conform to the requirements of ASTM D-1586-67 in that the inside diameter of the cutting edge was measured to be 1.5 inches and the driven end of the split-spoon was badly distorted and had a 0.50 inch taper. Thus the test procedure which defined the proper dimensions on the equipment was not followed (p. 67).

18. 10 CFR 50, Appendix B, Criterion XVIII states in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effective use of the program."

The STP PSAR Section 17.0, paragraph 17.1.18A states in part, "Houston Light and Power Company (HL&P) requires . . . periodic audits be performed to verify compliance with all aspects of the program. . . . to verify by evaluation of objective evidence . . . program has been properly implemented; to assess the effectiveness of the QA program; to identify . . . and to verify correction of identified nonconformances... Applicable elements of the QA Program shall be audited at least annually . . . with the following additional criteria to be used for modifying the audit frequency:

- 4. When it is suspected the safety, performance or reliability of an item is in jeopardy due to deficiencies and nonconformances with respect to the organization's QA Program;
- When it is considered necessary to verify implementation of required corrective actions..."

The STP PSAR Section 17.0, paragraph 17.1.18B states in part, "Brown and Root, Incorporated (B&R) has established an audit system . . . for internal . . . audits. Internal audits are audits of activities of the B&R organization... B&R performs audits of all activities affecting quality, including but not limited to the following:

- The evaluation of work areas, activities, processes, and items (hardware)
- 9. The review of documents and records
- 10. An objective evaluation of
 - a. Quality related practices, procedures and instruction
 - b. The effectiveness of implementation..."

The B&R QA Procedure ST-QAP 7.1 reiterates the above requirements.

a. Contrary to the above, neither the HL&P QA plan Section 8.0 nor procedure QAP-5 "Audits" include provisions to implement the above requirements concerning performance of supplemental audits.

Furthermore, neither HL&P nor B&R (Houston) performed supplemental audits to determine if suspected safety performance or reliability of an item was in jeopardy, even though: (1) continuing allegations were received during the period from mid-1977 through 1979 relative to civil construction and inspection activities, and (2) significant voids were identified in the Unit No. 1 containment shell in early 1978 (followed just recently by the discovery of apparently similar type voids in the Unit No. 2 containment vessel shell) (pages 95, 100 and 101).

b. HL&P QA Procedure, QAP-5B in paragraph 6.2 states in part, "Objective evidence shall be examined for compliance with Quality Assurance requirements. This includes review of Quality Assurance/ Quality Control procedures and documentation which implements the Quality Assurance Program Requirements. Selected elements of the quality assurance effort shall be audited to the depth necessary to determine whether or not it is being implemented effectively."

Contrary to the above procedure and the previously referenced PSAR and Appendix B, Criterion XVIII requirements, HL&P (Houston) failed to audit the HL&P (site) QA function to the depth necessary.

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Houston audits of site QA functions were essentially a review of records and did not identify the fact that HL&P site procedures PSQCP-C and PSQP-A3 were not being effectively implemented in that nonconformances and deviations were not being identified in the civil surveillance reports (pages 99 and 104).

c. HL&P South Texas QA Plan Section 8.0, paragraph 8.2 states in part, "HL&P has the responsibility for the overall auditing of quality activities for the South Texas Project. The frequency of audits performed by HL&P . . . are generally as follows: Brown & Root site construction - annually; Brown & Root site QA/QC - semiannually."

Contrary to the above procedure and previously referenced PSAR and Appendix B, Criterion XVIII requirements, HL&P (Houston) did not audit the implementation/execution of B&R site construction procedures for the years 1977, 1978 and 1979, nor the site QA/QC procedures ST-QAP-2.7, 3.1, 3.2, 4.3, 5.3, 5.4, 5.5 and 6.1 during the years 1978 and 1979 (p. 100).

19. 10 CFR 50, Appendix B, Criterion XVIII states in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

The STP PSAR Section 17.0, paragraph 17.1.18B states in part, "Brown & Root, Incorporated (B&R) has established an audit system . . . for internal . . . audits. Internal audits are audits of activities of the B&R organization... B&R performs audits of all activities affecting quality, including . . . The evaluation of work areas, activities, processes, and items (hardware) . . . An objective evaluation of quality related practices, procedures and instruction. The effectiveness of implementation."

B&R QA Procedure ST-QAP 7.1 reiterates the above requirements.

Contrary to the above, B&R (Houston) audits of B&R site QA/QC and construction activities were essentially only reviews of records and did not determine to the depth necessary, whether the site quality procedures were being effectively implemented. Further, no audits were conducted of site design control in 1978, although design lead time over construction was and continues to be very short and numerous Field Requests for Engineering Action and other design change documents were being processed (p. 100).

20. 10 CFR 50, Appendix B, Criterion X, requires in part, "Houston Lighting and Power Company (HL&P) will establish with each of its prime contractors... the primary inspection responsibility. HL&P, however, retains the responsibility for review, evaluation and surveillance of the inspection procedures utilized by these organizations... HL&P requires by contract that the principal contractors... meet the requirements of 10 CFR 50, Appendix B... HL&P and/or its representative shall verify... the inspections are being performed and documented by personnel in conformance with approved procedures..."

The STP PSAR Section 17.1.10 states in part, "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 the activity."

Paragraph 3.22.2 of Brown & Root Procedure CCP-3 requires in part that the QC Civil Inspector ensure compliance with applicable B&R drawings by verifying that reinforcing steel is supported and tied to prevent displacement.

Contrary to the above, on December 7, 1979, although completed QC documentation indicated that the reinforcing steel for placement DG1-M1 was properly installed, a sample inspection of ten vertical tie bars, made when the placement was about 1/3 completed, identified that three of the ten were unwired (p. 53).

21. 10 CFR 50, Appendix B, Criterion III requires in part, "the design basis . . for those structures, systems and components . . . are correctly translated into specifications, drawings. procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled."

The STP PSAR Section 17.1 states in part, "The HL&P QA Program imposes the following design control requirements on its own activities as well as those of its principal subcontractors: . . . (3) appropriate quality standards are specified and included in the design documents, and deviations and changes from such standards are controlled. . . (8) Design and specification changes are subject to the same design controls which were applicable to original design."

Brown & Root QA Manual, Section 3, "Design Control Procedure" reiterates the above requirements.

Contrary to the above, Brown and Root correspondence BC-22539 authorized design changes to welding requirements contained in Welding Procedures MCEP-3 and MCEP-4 and Welding Specification A010P002 without proper review and approval. Furthermore, field welding personnel and welding inspectors are using this letter and the attached diagram as guidance for we ing and inspecting (p. 74). Each day of failure to meet the requirements of 10 CFR 50, Appendix B, constitutes a separate infraction and a penalty of \$3,000 is proposed for each (cumulative civil penalties - October 1979 through January 1980 -123 days x \$3,000 = \$369,000).

B. 10 CFR 50.55a(3), states in part, "... piping which is part of the reactor coolant pressure boundary shall meet the requirements for Class 1 components set forth in Section III of the ASME Code ..."

ASME Section III, NB-4321 (a) states in part, "... shall establish the procedure and conduct the tests required by this article and by Section IX in order to qualify both the welding procedures and the performance of welders and welding operators ..."

ASME Section IX, QW-191, states in part, " . . . the radiographic examination . . . shall meet the technique requirements of Article 2, Section V, . . . "

Paragraph T-263, Article 2 of Section V of the ASME Code, requires that a source side penetrameter be used where accessibility permits hand placement of penetrameter on the source side of the item being radiographed.

Contrary to the above, the inspector observed specimens completed by the welders and welding operators as well as the radiographs of the weld specimens which were made for qualification to weld on Class 1 components with easy accessability, containing only film side penetrameters (p. 70). On January 14, 1980, the inspector observed a weld being made on a Class 1 system, the main reactor coolant piping, by an improperly qualified welder.

This is an infraction. (Civil Penalty \$3000)

Although the total civil penalties amount to \$372,000, pursuant to Section 234 of the Atomic Energy Act of 1954, as amended, (42 USC 2282), the total civil penalties for any thirty-day period cannot exceed \$25,000. Consequently, civil penalties in the amount of \$100,000 are proposed for the above.

This Notice of Violation is sent to Houston Lighting and Power Company pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Houston Lighting and Power Company is hereby required to submit to this office within twenty five (25) days of the receipt of this notice, a written statement of explanation in reply including for each item of noncompliance, (1) admission or denial of the alleged item of noncompliance; (2) the reasons for the item of noncompliance if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further items of noncompliance; and (5) the date when full compliance will be achieved.