VENDOR INSPECTION REPORT

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

Report No. 99900021/77-02 Docket No. 99900021

Company: Pullman Power Products Program No. 44020
Division of Pullman Incorporated
P. O. Box 3308, Reach Road
Williamsport, Pennsylvania 17701

Inspection conducted: August 30 - September 2, 1977

Inspectors: for D. M. Hunnicutt 9/14/77
I. Barnes, Contractor Inspector, Vendor Inspection Branch — Date

Approved by: D. M. Hunnicutt 9/14/77
D. M. Hunnicutt, Chief, Components Section II, Vendor Inspection Branch — Date

Summary:

Inspection on August 30 - September 2, 1977 (99900021/77-02)

Areas Inspected: Implementation of ASME accepted QA Manual including action on previous inspection findings; control of forming; equipment calibration and heat treatment. The inspection involved 27 inspector-hours on site.

Results: In the four (4) areas inspected, no deviations or unresolved items were identified in one (1) area. The following were identified in the remaining areas:

Deviations: Action on Previous Inspection Findings (Details Section, paragrapns B.3.b.(1), B.3.b.(2), B.4.b.); Control of Forming (Details Section, paragraphs C.3.a.(1), C.3.a.(2)); Equipment Calibration (Details Section, paragraphs D.3.a.(1), D.3.a.(2)).

Unresolved Items: Equipment Calibration (Details Section, paragraph D.3.b.).

Details Section

A. Persons Contacted

R. N. Babcock, Manager, Purchasing
L. A. Crist, Administrative Assistant
T. Daniels, QA Manager
J. Fornwalt, QC Inspector
V. W. Messner, Code Engineer
F. J. Richards, Welding Engineer
K. A. Swisher, QA Engineer, Central Staff

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 77-01): Failure to procure certain stock materials to the requirements of the ASME Code, Section III, Class 2. The inspector verified that the committed QA Manual revisions had been approved by the AIA and implemented.

2. (Closed) Deviation (Report No. 77-01): Procurement of certain stock materials without verifying that the purchase was from an Approved Vendor. The inspector verified that the Vendor Submittals - Documentation Check List form had been revised to include verification of vendor approval status for purchase order review.

3. a. (Closed) Deviation (Report No. 77-01): Use of a cooling rate during postweld heat treatment above the maximum rate permitted by the applicable specification. The inspector verified that the committed training actions had been performed and that the committed dual review of heat treat charts had been implemented.

   b. Investigation within the scope of this inspection revealed the following two (2) deviations from commitment:

      (1) Paragraph 8.4.2 of Engineering Specification ES-202, revision dated November 1, 1973, states, "Above 600°F the heating rate shall not exceed 400°F per hour or 400°F divided by the maximum metal thickness in inches, whichever is less."

      Contrary to the above, the inspector observed the following with respect to a heat treatment run containing a nuclear assembly of 1 3/4 inch maximum metal thickness (i.e., maximum permitted heating rate of 228°F per hour above 600°F).

(a) The furnace chart showed an actual maximum heating rate of 265°F per hour was used above 600°F.

(b) The furnace chart had been reviewed and accepted by QA.

(2) Paragraph 3.4 in Section XIV of the QA Manual states, "As part of the final review, the QA Engineer or his designated representative will verify that the total heat treatment time at temperature applied to test specimens representing each part in the assembly is at least equal to 80% of the total time at temperature applied to the component or assembly. This applies only to: (a) All Class 1 ferritic base material except P Number 1 with a nominal wall thickness of 2" or less and (b) all ferritic welding materials and weld procedure qualifications."

The Pullman Power Products (PPPA) corrective action response letter of September 23, 1976, states with respect to Item 6, Enclosure, Inspection Report No. 76-02, "At the present time we are in the process of developing a procedure describing the method to be employed to verify that the heat treat requirements of NB/NC/ND-4333 and NB/NC-2431.1(c) of ASME Section III is satisfied . . . Corrective Action Initiated - No later than November 1, 1976."

Contrary to the above requirements, the QA Engineer or his designated representative did not verify using the developed procedure, that the total heat treatment time at temperature applied to test specimens representing each part in the assembly was at least 80% of the total time at temperature applied to the assembly, as evidenced by:

(a) QA approval of an assembly, which had received a minimum total time at temperature of 5 hours 50 minutes, although applicable welding procedure qualifications and a certification for welding material used in the assembly showed a qualification time of 4 hours.

(b) Absence of any records to signify that the PPPA heat treat verification procedure had been used.

4. a. (Closed) Deviation (Report No. 77-01): Authorization and use of a welding procedure specification for an assembly receiving postweld heat treatment, which had been qualified for the combination of welding processes selected, only in the as welded condition. The inspector verified that the welding procedure specification had now been qualified in the postweld heat treated condition and that Corporate Welding Procedures had been qualified in both the as welded and postweld heat treated conditions.

b. Investigatior within the scope of this inspection revealed the following deviation from commitment:

Paragraph 9.2 in Section VII of the QA Manual states, "The necessary tests required to meet the requirements of NB-2400 may be purchased with the materials, performed by the company or performed by an outside laboratory at the Welding Engineer's option. The test coupons shall conform to preheat, interpass and postweld heat treatment requirements of the Company Welding Procedures."

Contrary to the above, the test coupons for 1/16 inch, SFA 5.18 E 705-6 wire, Heat No. 50209, which had been approved for use in Section III applications, did not conform to the postweld heat treatment requirements of Company Welding Procedures, in that:

(1) Company Welding Procedures stipulated postweld heat treatment hold temperatures within the 1100-1250^{o}F range.

(2) Heat No. 50209 was qualified for the postweld heat treated condition, using a hold temperature of 1375^{o}F.

C. Control of Forming

1. Objectives

The objectives of this area of the inspection were to verify that forming was controlled in accordance with the ASME accepted QA program and applicable ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual, Section IX, revision date September 1, 1976, "Control Of Special Processes."

b. Review of QA Manual, Section X, revision date March 1, 1977, "Inspection."

c. Review of QA Manual, Section XIV, revision date September 1, 1976, "Inspection, Test and Operating Status."

d. Review of Engineering Specification, ES-205, Revision date December 1, 1975, "Fabrication & Field Installation Specifications For Nuclear Power Plant Components - Piping Systems And Appurtenances . . . ASME Section III."

e. Visual examination of randomly selected bends.

f. Observation of bending furnaces and temperature control instrumentation.

g. Review of shop drawings and completed process sheets for randomly selected bends.

h. Interviews with cognizant personnel.

3. Findings

a. Deviations from Commitment

(1) Paragraph 2.2 in Section XIV of the QA Manual states, "The Process Sheet outlines in detail the sequence of operations required to complete the Item, including required inspection, examination and testing operations."

Contrary to the above, the Process Sheets for Job No. 8251, F Sheets 1128 and 1147, did not outline in detail the sequence of operations to complete the Item, including required inspection, examination and testing operations, as evidenced by:

(a) The method of bending to be used, from those options permitted by the applicable specification, was not defined for the specific piping.

(b) No reference was made in the original issue of the Process Sheets, that postweld heat treatment was a required sequence, if cold bending was performed.

(c) QC inspection of bends, although being performed to verify adequacy of bends with respect to such criteria as ASME Section III, ovality requirements, was not indicated on the Process Sheets as a required inspection point.

The inspector further noted, that the referenced Process Sheets did not resemble the sample (Form 16) in the QA Manual, with respect to scope and range of QC Inspections. The referenced sheets also omitted the procedures to be used for specific sequences, although this was completed in the QA Manual sample.

(2) Paragraph 3.5 in Section XIV of the QA Manual states, "After satisfactory final inspection and review of accumulated documentation, an appropriate Data Report is prepared. The Code Engineer or his designated representative signs the Data Report and forwards it with all evidence of compliance to the Authorized Inspector for his review. If all data meets with his satisfaction, he will sign the Data Report and authorize the application of the appropriate Code Stamp to the nameplate on the Item."

Contrary to the above, the final inspection records for Job No. 8251, F Sheets 1128 and 1147, indicated the Code Stamp was applied to the nameplates on the assemblies one (1) day before the Data Reports were signed by either the Code Engineer or the Authorized Inspector.

b. Unresolved Items

None.

D. Equipment Calibration

1. Objectives

The objectives of this area of the inspection were to verify that:

a. A system had been established and documented to assure that tools, gages, instruments and other measuring equipment used in activities affecting quality are calibrated and controlled to maintain accuracy within required limits.

b. Calibration is performed against measurement standards, which have a known relationship to national standards where such standards exist.

c. The system provided for identification of each instrument, determination of calibration status, records of calibration, identity of standard used for calibration and specified frequency and accuracy required.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual, Section XII, revision date March 1, 1977, "Control Of Measuring And Test Equipment."

b. Review of QA Program Procedure, XII-2, revision date August 25, 1977, "Procedure for the Calibration of Tools, Measurement & Test Equipment."

c. Verification of calibration status of randomly selected gages, surface and optical pyrometers, welding power source meters and pressure gages.

d. Observations on the shop floor.

e. Interviews with cognizant personnel.

3. Findings

a. Deviations from Commitment

(1) Paragraph 4.3 in Section XII of the QA Manual states in part, "Calibration shall be performed at intervals specified in the procedure . . . ."

Paragraph 8.18.4 in calibration procedure, XII-2, revision date August 25, 1977, states with respect to calibration of contact pyrometers, "Calibration shall be performed every six months."

Contrary to the above, contact pyrometers (Control Nos. 840012 and 840018) were being calibrated on an annual basis and not every six months.

(2) Paragraph 5.1 in Section XII of the QA Manual states in part, ". . . a policy has been established which requires separate tools for manufacture and separate tools for inspection. Use of an out-of-calibration tool will immediately become apparent at inspection. In this case, using the operator's initials on the Process Sheet, the tool used in manufacture can be identified . . . ."

Contrary to the above, out-of-calibration tools used by manufacturing may not be identifiable, as evidenced by the observation by the inspector of an inspection tool being loaned to other manufacturing personnel by the machinist to whom the tool was formally assigned.

b. Unresolved Items

The QA program does not formally address actions to be taken by calibration personnel, when inspection tools and gages are discovered to be out of calibration at scheduled calibration checks.

E. Heat Treatment

1. Objectives

The objectives of this area of the inspection were to verify that heat treatment was performed in accordance with written procedures and that the procedures were consistent with the applicable requirements of code and material specifications.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of QA Manual, Section IX, revision date September 1, 1976, "Control Of Special Processes."

b. Review of Engineering Specification JS-3, revision date December 12, 1976.

c. Examination of four (4) solution annealing charts and cooling certification.

d. Interviews with cognizant personnel.

3. Findings

Within the scope of this inspection, no deviations or unresolved items were identified.

F. General

The Pullamn Kellogg Power Piping and Chimney Groups have been reorganized into the Pullman Power Products Division of Pullman Incorporated.

G. Exit Interview

A post inspection management meeting was held on September 2, 1977, at the Pullman Power Products manufacturing facility in Williamsport, Pennsylvania. The results of the inspection were discussed with the following management and Authorized Inspection Agency representatives:

R. T. Walter, Assistant Plant Manager
E. F. Gerwin, Director, Quality Assurance
T. Daniels, QA Manager
A. E. Duncan, Scheduling Manager
J. Krommenhoek, Plant Superintendent
W. J. Mitchell, Senior QC Consultant
F. J. Richards, Welding Engineer
K. A. Swisher, QA Engineer, Central Staff
H. J. Donlin, Inspection Specialist, Hartford Steam Boiler Inspection and Insurance Company
J. H. Khandhar, Authorized Nuclear Inspector, Hartford Steam Boiler Inspection and Insurance Company

The following subjects were discussed:

1. The areas inspected as defined under Summary.

2. The deviations from commitment identified in the Details Section of this report.

3. The unresolved item identified in the Details Section of this report.

4. Management comments were generally related to clarification of the findings.

A-60

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TEXAS 76012

THIS DOCUMENT HAS NOT BEEN REVIEWED FOR PROPRIETARY INFORMATION AS DESCRIBED IN 10 CFR 2.790 IE

09 AUG 1979

Docket No. 99900021/79-02

Pullman Power Products
Division of Pullman Incorporated
ATTN: Mr. R. E. Howard
Vice President and General Manager
Post Office Box 3308, Reach Road
Williamsport, Pennsylvania 17701

Gentlemen:

This refers to the QA Program inspection conducted by Mr. I. Barnes of this office on July 16-20, 1979, of your facility at Williamsport, Pennsylvania, associated with the fabrication of nuclear piping assemblies and to the discussions of our findings with Mr. T. Daniels and members of your staff at the conclusion of the inspection.

This inspection was made to confirm that, in the areas inspected, your QA Program is being effectively implemented. The inspection effort is not designed to assure that unique quality requirements imposed by a customer are being implemented; nor to assure that a specific product, component or service provided by you to your customers, is of acceptable quality. As you know, the NRC requires each of its licensees to assume full responsibility for the quality of specific products, components or services procured from others. You should therefore not conclude that the NRC's inspection exempts you from inspections by an NRC licensee or his agents nor from taking effective corrective action in response to their findings.

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

During the inspection it was found that the implementation of your QA Program failed to meet certain NRC requirements. The specific findings and references to the pertinent requirements are identified in the enclosures to this letter.

Please provide us within thirty (30) days of your receipt of this report a written statement containing, (1) a description of steps that have been or will be taken to correct these items, (2) a description of steps that have been or will be taken to prevent recurrence, and (3) the date your corrective actions and preventive measures were or will be completed.

In accordance with Section 2.790 of the Commission's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter with enclosure and your reply, together with the enclosed inspection report will be placed in the Commission's Public Document Room. If this report contains any information that you believe to be proprietary, it is necessary that you make a written application within thirty (30) days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. 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,

Uldis Potapovs, Chief
Vendor Inspection Branch

Enclosures:
1. Notice of Deviation
2. Inspection Report No. 99900021/79-02

bcc:
AD/RCI (Reinmuth)
IE FILES
NRR:DPM:QAB
CENTRAL FILES
PDR HQS
REG. DIRECTORS I, II, III, V
WEVETTER, RIV
ASME
NBB & PVI

Pullman Power Products
Docket No. 99900021

NOTICE OF DEVIATION

Based on the results of an NRC inspection conducted on July 16-20, 1979, it appears that certain of your activities were not conducted in accordance with NRC requirements.

Criterion V of Appendix B to 10 CFR 50 states:

> "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Deviations from these requirements are as follows:

A. Paragraph 13.4.1 in Section XIII of the QA Manual states, "All stainless steel items are to be handled with nylon slings or chain slings wrapped in burlap or cloth."

Contrary to the above, three stainless steel subassemblies (Job No. 8088, Drawings F638, F641 and F955) were observed in contact with chain slings, which had not been wrapped in burlap or cloth.

B. Paragraph 4.2.3 in Section IV of the QA Manual states in part with respect to purchase requisitions, "Required data includes but is not limited to . . . c. Applicable ASME Section III Class and quality requirements. . . ."

Paragraph 4.2.5A in Section IV of the QA Manual states, "The Purchase Order is then forwarded to the Code Engineer - QA Department where he, or a designated representative will review it to assure that purchase is from an Approved Vendor and that all of the Code quality requirements are shown and are correct. He will then approve the Purchase Order and forward it to the Buyer for purchase." Paragraph 4.2.9 in Section IV of the QA Manual states, "All revisions to purchase orders will be handled in the same manner as the original Purchase Order."

Contrary to the above:

1. Purchase Order N8468-2, which was applicable to ASME Section III Class 1 fabrication, permitted either seamless or welded fittings to be supplied for Item 4; i.e SA420 WPL-6 or WPL-6W, but included ASME Section III quality requirements for the welded grade fittings only.

2. Revisions G and J to Purchase Order N84682-2 were not forwarded to the Code Engineer - QA Department for the required review and approval.

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

Report No. 99900021/79-02 Program No. 51300

Company: Pullman Power Products
Division of Pullman Incorporated
P. O. Box 3308, Reach Road
Williamsport, Pennsylvania 17701

Inspection Conducted: July 16-20, 1979

Inspector: I. Barnes 8-8-79
I. Barnes, Contractor Inspector Date
Components Section II
Vendor Inspection Branch

Approved by: for I. Barnes 8-8-79
D. M. Hunnicutt, Chief Date
Components Section II
Vendor Inspection Branch

Summary

Inspection on July 16-20, 1979 (99900021/79-02)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, criteria and applicable codes and standards; including action on previous inspection findings; manufacturing process control; handling, storage and shipping; and QA Records. The inspection involved thirty-five (35) inspector-hours on site.

Results: In the four (4) areas inspected, no apparent deviations or unresolved items were identified in two (2) areas; the following deviations being identified in the remaining areas:

Deviations: Handling, Storage and Shipping - Use of chain slings in contact with austenitic stainless steel subassemblies not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section XIII of the QA Manual (Notice of Deviation, Item A.).

Manufacturing Process Control - Issue of a certain purchase order and control of purchase order revisions not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section IV of the QA Manual (Notice of Deviation, Item B.).

DETAILS SECTION

A. Persons Contacted

R. N. Babcock, Manager, Purchasing
A. Bair, QA Manager
E. L. Baker, Plant Manager
L. A. Crist, Administrative Assistant
T. Daniels, QA Director
J. A. Koch, Manager, Manufacturing Engineering
J. J. Krommenhoek, Production Manager
T. C. Myers, Welding Engineer
F. J. Richards, Welding Engineer
R. A. Stryker, QA/QC Supervisor
D. B. Eggleston, Regional Manager, Hartford Steam Boiler Inspection and Insurance Company
R. H. Wertz, Authorized Nuclear Inspector, Hartford Steam Boiler Inspection and Insurance Company

All persons contacted were also present at the exit meeting.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Item A, Notice of Deviation, Inspection Report No. 79-01): Current QA Program does not require a determination of corrective action relative to discrepancies found during calibration of welding equipment measuring devices.

   The inspector verified that provisions for consideration of effects of use of welding equipment measuring devices, subsequently established to be out of calibration, had been made in Shop Procedure XII-2W, revision dated July 9, 1979. Absence of recorded instances of welding equipment errors iin excess of calibration tolerances precluded evaluation of corrective action effectivity during this inspection.

2. (Closed) Deviation (Item B, Notice of Deviation, Inspection Report No. 79-01): Failure to select an appropriate WPS for a certain weld and use of a preheat temperature in welding below the minimum stipulated by the applicable drawing.

   The inspector verified that the committed training actions with respect to welding supervision had been performed, the stipulated nondestructive examination of the weld performed using below minimum reheat had been satisfactorily accomplished and that the welding parameters of Welding Procedure 26 and 27 were compatible.

C. Handling, Storage and Shipping

1. Objective

The objective of this area of the inspection was to establish that measures have been established and implemented relative to control of handling, interim storage and shipment of parts and components, which were consistent with applicable regulatory, code and contract requirements.

2. Method of Accomplishment

The preceding objective was accomplished by:

a. Review of Section XIII of the QA Manual, revision dated February 15, 1979, "Handling, Storage and Shipping."

b. Review of Shop Procedure XIII-7W, revision dated November 14, 1977, "Storage of Materials For Piping Subassemblies Prior To Shop Fabrication."

c. Review of Shop Procedure XIII-8W, revision dated May 8, 1978, "Shop Handling."

d. Review of Shop Procedure XIII-10, original dated September 1, 1976, "Shipping."

e. Observation of material storage practices prior to fabrication and in-process.

f. Observation of shop lifting practices and provisions made to protect assemblies from damage during handling.

g. Observation of practices used for rail shipment of ferritic materials.

3. Findings

a. Deviation from Commitment

See Notice of Deviation, Item A.

b. Unresolved Items

None.

D. Manufacturing Process Control

1. Objective

The objective of this area of the inspection was to verify that the manufacturing process is controlled in accordance with applicable regulatory, code and contract requirements.

2. Method of Accomplishment

The preceding objective was accomplished by:

a. Review of Section IV of the QA Manual, revision dated February 15, 1979, "Procurement Document Control," relative to controls applied to material procurement.

b. Review of Section V of the QA Manual, revision dated February 15, 1979, "Instructions, Procedures and Drawings," relative to methods used for preparation, approval, revision and issue of drawings and manufacturing procedures.

c. Review of Section VII of the QA Manual, revision dated February 15, 1979, "Control of Purchased Material, Equipment, and Service," relative to control system for materials issue.

d. Review of Section IX of the QA Manual, revision dated February 15, 1979, "Control of Special Processes," relative to welding and NDE controls.

e. Review of Section X of the QA Manual, revision dated February 15, 1979, "Manufacturing Control and Inspection," relative to definition of manufacturing control system.

f. Examination of traveler packages for six (6) assemblies relative to:

(1) Definition of manufacturing procedures used to perform scheduled manufacturing operations.

(2) Verification that completed operations had been signed off.

(3) Ascertaining that manufacturing records were consistent with observed visual status.

(4) Compliance with specified Authorized Nuclear Inspector hold points.

(5) Review for performance of required examinations and tests at an applicable manufacturing stage.

(6) Verification of use of approved procedures.

g. Review of purchase orders for items in one (1) ASME Section III Class 1 assembly with respect to compliance with the procurement system.

h. Verification that items were procured from companies contained in the Approved Vendor List.

i. Review of Certified Material Test Reports for items in the referenced assembly to establish acceptance by Pullman Power Products (PPPA) and to verify compliance with procurement documents and the customer piping specification.

3. Findings

a. Deviation from Commitment

See Notice of Deviation, Item B.

b. Unresolved Items

None.

E. QA Records

1. Objective

The objective of this area of the inspection was to ascertain that procedures have been prepared, approved and implemented for the control of QA Records, which are consistent with the commitments of the QA Program.

2. Method of Accomplishment

The preceding objective was accomplished by:

a. Review of Section XVII of the QA Manual, revision dated February 15, 1979, "Quality Assurance Records."

b. Review of Procedure XVII-2W, revision dated November 13, 1978, "Quality Assurance Records Procedure, General Requirements," with respect to:

(1) Description of storage area.

(2) Method of filing.

(3) Use of records check lists.

(4) Rules governing access and method used for maintaining control and accountability for records removed.

c. Observation of storage area and access controls.

d. Review of three (3) customer specifications with respect to designation of permanent records, retention and transmittal requirements, and requirements for storage of non-permanent records.

3. Findings

a. Within this area of the inspection, no deviations or unresolved items were identified.

b. PPPA has not accepted responsibility for retention of permanent records for any contract.

c. The storage facility used for retention of non-permanent records is not in accordance with the air circulation, fire resistance and fire protection criteria expressed in paragraph 5.6 of ANSI N45.2.9-1974. The inspector observed no instance; however, where these criteria had been made a contractual requirement.

F. Exit Meeting

The inspector met with the management and Authorized Inspection Agency representatives denoted in paragraph A above on July 20, 1979, at the conclusion of the inspection. The scope of the inspection and the findings were dicussed with management representatives present. Management had no questions concerning the statements of the inspector made with respect to the findings.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TEXAS 76012

0 1 MAY 1980

Barnes 59
A-60

Docket No. 99900021/80-01

Pullman Power Products
Division of Pullman Incorporated
Attn: Mr. R. E. Howard
Vice President and General Manager
Post Office Box 3308, Reach Road
Williamsport, Pennsylvania 17701

Gentlemen:

This refers to the QA Program inspection conducted by Mr. I. Barnes of this office on April 21-24, 1980, of your facility at Williamsport, Pennsylvania, associated with the fabrication of nuclear piping assemblies and to the discussion of our findings with Mr. T. Daniels and members of your staff at the conclusion of the inspection.

This inspection was made to confirm that, in the areas inspected, your QA Program is being effectively implemented. The inspection effort is not designed to assure that unique quality requirements imposed by a customer are being implemented; nor to assure that a specific product, component or service provided by you to your customers, is of acceptable quality. As you know, the NRC requires each of its licensees to assume full responsibility for the quality of specific products, components or services procured from others. You should therefore not conclude that the NRC's inspection exempts you from inspections by an NRC licensee or his agents nor from taking effective corrective action in response to their findings.

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

Within the scope of this inspection, we found no instance where you failed to meet NRC requirements.

In accordance with Section 2.790 of the Commission's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter together with the enclosed inspection report will be placed in the Commission's Public Document Room. If this report contains any information that you believe to be proprietary, it is necessary that you make a written application within thirty (30) days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. 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,

Uldis Potapovs, Chief
Vendor Inspection Branch

Enclosure:
Inspection Report No. 99900021/80-01

bcc:
AD/RCI (REINMUTH)
IE Files
NRR:DPM:QAB
REG. I, II, III & V
PDR HQS
CENTRAL FILES
WEVETTER, RIV
ASME
NBB&PVI

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

Report No. 99900021/80-01

Program No. 51300

Company: Pullman Power Products
Division of Pullman Incorporated
P. O. Box 3308, Reach Road
Williamport, Pennsylvania 17701

Inspection Conducted: April 21-24, 1980

Inspector: D M Hunnicutt for I. Barnes, Contractor Inspector
Components Section II
Vendor Inspection Branch
4/30/80 Date

Approved by: D M Hunnicutt
D. M. Hunnicutt, Chief
Components Section II
Vendor Inspection Branch
4/30/80 Date

Summary

Inspection on April 21-24, 1980 (99900021/80-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, criteria and applicable codes and standards; including action on previous inspection findings, internal audits, heat treatment and nonconformances and corrective action. The inspection involved twenty-five (25) inspector-hours on site.

Results: In the four (4) areas inspected, no apparent deviations or unresolved items were identified.

DETAILS SECTION

A. Persons Contacted

R. N. Babcock, Manager, Purchasing
*A. Bair, QA Manager
*E. L. Baker, Plant Manager
W. L. Cox, Senior QA Auditor
*T. Daniels, QA Director
*J. A. Koch, Manager, Manufacturing Engineering
*J. J. Krommenhoek, Production Manager
*T. C. Myers, Welding Engineer
*F. J. Richards, Welding Engineer
*R. A. Stryker, QA/QC Supervisor
J. R. Weaver, Project Engineer
*H. J. Donlin, Authorized Nuclear Inspection Specialist, Hartford Steam Boiler Inspection and Insurance Co.
*D. Klose, Authorized Nuclear Inspector, Hartford Steam Boiler Inspection and Insurance Co.

*Denotes those persons attending the exit meeting.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Item A, Notice of Deviation, Inspection Report No. 79-02): Use of chain slings on stainless steel sub-assemblies without prior wrapping in burlap or cloth.

   The inspector verified that the committed directive had been issued to responsible supervision. Observation by the inspector of shop handling activities relative to stainless steel assemblies, revealed no further instance of deviation from QA program commitments.

2. (Closed) Deviation (Item B, Notice of Deviation, Inspection Report No. 79-02): Failure to fully provide applicable quality requirements on a certain purchase order and non-submittal to QA of two purchase order revisions for review and approval.

   The inspector verified that the committed purchase order review and training session had been conducted.

C. Internal Audits

1. Objectives

   The objectives of this area of the inspection were to:

   a. Ascertain that a system has been prescribed and documented for auditing, which is consistent with the commitments of the QA program.

b. Determine that the system has been properly and effectively implemented.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of Section XVIII, revision dated February 15, 1979, of the QA Manual, "Audits."

b. Review of Williamsport Shop Procedure No. XVIII - IW, revision dated May 25, 1979, "Internal Auditing Procedure of Shop QA Programs by QEG."

c. Examination of audit check lists used to perform audits in 1979 of the Williamsport plant.

d. Verification that the audit check lists provided for adequate measurement of plant compliance with the documented QA program.

e. Review of team leader qualifications and team orientation records.

f. Verification of reporting of audit results to responsible levels of management.

g. Review of follow-up actions regarding implementation of agreed corrective actions for audit findings.

h. Review of audit frequencies relative to QA program commitments.

i. Discussions with cognizant QA personnel relative to proposed scope of internal audit activities for 1980.

j. Review of the results of the 1979 management audit of the Pullman Power Products, Williamsport Plant (PPPA) QA program and follow-up actions taken.

3. Findings

Within this area of the inspection, no deviations from commitment or unresolved items were identified.

D. Heat Treatment

1. Objectives

The objectives of this area of the inspection were to verify that elevated temperature heat treatments were being performed in accordance

with written procedures and that the procedures were consistent with applicable code, customer and material specification requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of Section IX, revision dated February 15, 1979, of the QA Manual, "Control Of Special Process."

b. Review of solution annealing requirements in Bechtel Specification No. X4AQ01, Revision 6, "Specification For Shop Fabrication Of Nuclear Service Piping For The Georgia Power Company Alvin W. Vogtle Nuclear Plant Burke County, Georgia Units 1, 2 And Common."

c. Review of solution annealing requirements in PPPA Project Procedure IX-3-S75, revision dated November 17, 1977, "Fabrication & Field Installation Specification For Nuclear Power Plant Components, Piping Systems And Appurtenances - ASME Section III."

d. Review of PPPA Shop Procedure No. X-14W, revision dated November 14, 1977, "Furnace Load Check."

e. Examination of four (4) solution annealing charts and cooling certifications.

f. Verification of calibration status of temperature recorders installed in the furnace utilized for solution annealing heat treatment.

3. Findings

Within this area of the inspection, no deviations from commitment or unresolved items were identified.

E. Nonconformances and Corrective Action

1. Objectives

The objectives of this area of the inspection were to ascertain that:

a. A system had been established for the control of nonconformances and for assuring effective corrective actions.

b. The system was implemented.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of Section XV, revision dated February 15, 1979, of the QA Manual, "Nonconforming Materials, Parts or Components."

b. Review of Section XVI, revision dated February 15, 1979, of the QA Manual, "Corrective Action."

c. Review of PPPA Shop Procedure No. XV-IW, revision dated October 17, 1979, "Processing and Handling Nonconformances."

d. Examination of 1979 Defective Material Reports and Nonconformance Reports with respect to:

(1) Identification of item.

(2) Description of nonconformance and identity of reporting party.

(3) Identification of party responsible for the nonconformance and party responsible for resolution.

(4) Verification that proposed dispositions were subject to QA program required reviews and that the dispositions were in accordance with ASME Code requirements.

(5) Evidence of Authorized Nuclear Inspector cognizance of nonconforming conditions.

(6) Performance of corrective action measures in accordance with approved dispositions.

e. Verification of performance of required review by QA management of 1979 nonconformance reports.

3. Findings

Within this area of the inspection, no deviations from commitment or unresolved items were identified.

F. Exit Meeting

The inspector met with the management and Authorized Inspection Agency representatives denoted in paragraph A. above on April 24, 1980, at the conclusion of the inspection. The scope and results of the inspection were summarized by the inspector. The inspector also informed the management

representatives present that his program assignment had been essentially completed at the Pullman Power Products Williamsport facility and another NRC inspector would most probably be assigned inspection responsibilities for the facility. Management acknowledged the statements of the inspector and had no specific questions regarding the information presented to them.

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

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APR 30 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:

(1) 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

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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, Jr.
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 30 1980

APPENDIX A
NOTICE OF VIOLATION

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:

1. 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.

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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 to 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 informed 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).

l. 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).

2. 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. 3YO69YS029, 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).

4. 10 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:

1) 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 ensure 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 NRC, 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:

1) "Very detailed preplacement planning is carefully performed to identify potential consolidation problems . . ."

2) "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):

1) Concrete placement personnel were using improper consolidation practices and lighting as observed by an NRC inspector was inadequate for placement CI1-W81B made on November 20, 1979.

2) Concrete placement personnel were using improper consolidation practices on placement DG1-M1 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 requalifying (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. Reference should be made on the checklist as to the corrective 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;

5. 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:

8. 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.

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 were using this letter and the attached diagram as guidance for welding 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.

APPENDIX B

NOTICE OF PROPOSED IMPOSITION OF CIVIL PENALTIES

Houston Lighting and Power Company

Docket Nos. 50-498
50-499

This office proposes to impose civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (42 USC 2282), and to 10 CFR 2.205 in the cumulative amount of One Hundred Thousand Dollars ($100,000) for the aggregate items of noncompliance set forth in Appendix A to the cover letter. In proposing to impose civil penalties pursuant to this section of the Act and in fixing the proposed amount of the penalties, the factors identified in the Statements of Consideration published in the Federal Register with the rule making action which adopted 10 CFR 2.205 (36 FR 16894), August 26, 1971, and the "Criteria for Determining Enforcement Action," which was sent to NRC licensees on December 31, 1974, have been taken into account.

The Houston Lighting and Power Company may, within twenty five (25) days of the date of this notice, pay total civil penalties in the cumulative amount of One Hundred Thousand Dollars ($100,000) or may protest the imposition of the civil penalties in whole or in part by a written answer. Should the Houston Lighting and Power Company fail to answer within the time specified, this office will issue an Order imposing the civil penalties in the amount proposed above. Should Houston Lighting and Power Company elect to file an answer protesting the civil penalties, such answer may (a) deny the items of noncompliance listed in the Notice of Violation in whole or in part; (b) demonstrate extenuating circumstances; (c) show error in the Notice of Violation; or (d) show other reasons why the penalties should not be imposed. In addition to protesting the civil penalties in whole or in part, such answer may request remission or mitigation of the penalties. Any written answer in accordance with 10 CFR 2.205 should be set forth separately from your statement or explanation in reply pursuant to 10 CFR 2.201, but you may incorporate by specific reference (e.g., giving page and paragraph numbers to avoid repetition).

The Houston Lighting and Power Company's attention is directed to the other provisions of 10 CFR 2.205 regarding, in particular, failure to answer and ensuing orders; answer, consideration by this office and ensuing orders; requests for hearings, hearings and ensuing orders; compromise; and collection.

Upon failure to pay any civil penalty due which has been subsequently determined in accordance with the applicable provisions of 10 CFR 2.205, the matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Atomic Energy Act of 1954, as amended, (42 USC 2282).

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APPENDIX C

CROSS REFERENCES: NONCOMPLIANCES TO REPORT DETAILS

NONCOMPLIANCE	CRITERION	REPORT SECTION REFERENCE	REPORT PAGE NO.
A. 1	I	E.1.d	49
2	IX	E.3.a	61
3	XVI	E.3.c	64
4	V	E.3.a	61
5	XVII	E.3.d	65
6	XVI	E.7.d	94
7	XVI	E.2.b	53, 54
8	V	E.2.c	58
9	VI	E.4.a	69
10	IX	E.4.c.(2)(c)	72
11a	IX	E.5.b.(2)(a)	79
11b	IX	E.5.b.(2)(b)	82
11c	IX	E.5.a.(2)	76
12	V	E.5.b.(1)(a)	77
13	XVI	E.1.b.(Allegation 10A)	37
14	XVI	E.9.b.(3)	106
15	V	E.9.a.(1)	103
16	XV	E.3.f	67
17	XI	E.3.f	67
18a	XVIII	E.8.c	95
18a	XVIII	E.8.d.(2)	100
18a	XVIII	E.8.d.(3)	101
18b	XVIII	E.8.d.(1)	99, 104
18c	XVIII	E.8.d.(2)	100
19	XVIII	E.8.d.(3)	100
20	X	E.2.b	53
21	III	E.4.c.(3)(d)	74
B.	50.55(a)	E.4.b	70

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
HOUSTON LIGHTING AND POWER COMPANY	)	Docket Nos. 50-498
(South Texas Project, Units 1 & 2)	)	50-499

ORDER TO SHOW CAUSE (EFFECTIVE IMMEDIATELY)

I

The Houston Lighting and Power Company is the holder of Construction Permit Nos. CPPR-128 and CPPR-129, issued on December 25, 1975. These permits authorize, in accordance with their provisions, construction of the South Texas Project, Units 1 and 2, in Matagorda County, Texas.

II

As a result of allegations that QC inspectors were being threatened if they identified unacceptable items during concrete placements, an investigation (Report No. 50-498/77-08; 50-499/77-08) was conducted by the NRC Region IV (Arlington, Texas) Office during July 1977. Ten QC inspectors were interviewed, six stated they had experienced some harassment, but none stated that the harassment led to overlooking unacceptable items. In December 1977, an investigation (Report No. 50-498/77-14; 50-499/77-14) of an allegation that certain radiographs, mailed to a concerned citizen, revealed faulty welds, was not substantiated as the alleger was apparently the victim of a hoax. In March 1978, an investigation (Report No. 50-498/78-05; 50-499/78-05) was conducted of an allegation from an individual who felt he would become a potential

scapegoat for allowing the improper use of procedures; this allegation was not substantiated. In May 1978, an investigation (Report No. 50-498/78-09; 50-499/78-09) was conducted of allegations made by an anonymous individual that Cadweld records involving qualifications of QC inspectors were being falsified and QC inspectors were under pressure to violate inspection procedures and, thereby, not hold up construction work. There was no evidence that Cadweld records had been falsified. Interviews with QC inspectors indicated that while there was normal pressure to get the job done there was no undue pressure to violate procedures. One QC supervisor stated that his "holds" (inspection hold points) had sometimes been overruled by higher authority, but he stated this was management's prerogative and did not result from construction pressure. In July 1978, an investigation (Report No. 50-498/78-12; 50-499/78-12) was conducted of allegations made by an individual that QC Civil inspectors were inadequately trained on new procedures; the nonconformance reporting system was inadequate; QC inspectors were not given adequate support; upper management was inaccessible; and construction personnel placed undue pressure on QC inspectors. The allegations, for the most part, could not be substantiated. The investigation results did indicate apparent low morale of some QA/QC Civil inspectors and some weaknesses in the Civil QA program.

In early August 1978, Region IV rereviewed the results of the past several investigations and noted that although most of the allegations were not substantiated, low morale of QC personnel was certainly evident during the investigations. This observation prompted Region IV management to conduct a

special meeting with licensee's corporate management representatives in their corporate offices in Houston, Texas, on August 15, 1978 (Report No. 50-498/78-13; 50-499/78-13). The specific purpose of the meeting was not only to express concern about the apparent low morale of some Civil QA/QC personnel, but also to discuss apparent weaknesses in the implementation of the site QA/QC Civil program, and the adequacy of the present QA/QC staffing level. Region IV concluded the meeting by stating that although they recognized that most of the items discussed were based on allegations which were not substantiated, there was concern about certain perceived indications. Specifically, there appeared to be a morale problem in the site Civil QA/QC organization; the long QC inspector punch lists would suggest that the construction surveillance inspections by the craft foremen and field engineers were less than adequate and, thereby, placing additional pressures on QC inspectors to complete final inspections; the observations made by Region IV inspectors that Civil QC inspectors appeared to spend very little time at their desk preparing for inspections could suggest that QC inspectors have too heavy an inspection workload; finally, with regard to the adequacy of staffing, concern was expressed that the staffing plan for the current status of the project indicated that the site was below the specified QA/QC manpower level by some 21 Brown and Root personnel and by some 2 licensee personnel.

One month later, on September 15, 1978, a meeting was held in the Region IV office with licensee and Brown and Root management to further discuss commitments made by the licensee during the August 15, 1978, meeting in Houston.

Also discussed during the meeting were findings identified during the September 11-14, 1978, Region IV investigation of Cadweld irregularities which resulted in the issuance of an Immediate Action Letter on September 14, 1978, confirming a licensee imposed stop work order on placement of concrete in the Unit 1 Reactor Containment Building. The September 15 meeting was followed by a licensee letter dated October 3, 1978 to the Region IV office which addressed the several allegations that were the subject of the July 1978 Region IV investigation that led to the special meeting with the licensee on August 15, 1978. The actions committed to by the licensee, as set forth in the October 3 letter, to correct the apparent low morale problem and strengthen the QA/QC program were included in the inspection agenda for forthcoming Region IV inspections. The results of Region IV inspections conducted during the next several months indicated that actions were being taken by the licensee to strengthen the onsite QA/QC program and improve the morale of site QC inspectors.

Region IV continued to receive allegations which were primarily directed toward site QA/QC activities. During the period August 1978 to November 1979, five investigations were conducted by Region IV. In August 1978, an investigation (Report No. 50-498/78-14; 50-499/78-14) was conducted of an alleged solicitation of bribes by a former QC inspector. The allegation, involving one man's word against another, was not substantiated. An additional allegation revealed during the investigation that QC inspectors would be adversely affected by the termination of the former QC inspector was not substantiated.

In September 1978, an investigation (Report No. 50-498/78-15; 50-499/78-15) was conducted of allegations made by a QC inspector involving installation and inspection of Cadwelds, mislocation of a Unit 2 structure and the inability of some construction foremen to read and write. Four of the thirteen allegations were substantiated, resulting in two items of noncompliance. Allegations that were substantiated included the loss of a field sketch, application of centering marks to rebar after Cadwelds were completed, lack of second shift QC inspector coverage for Cadwelding, and that only three Cadweld QC inspectors were available for Cadweld inspection. The allegation concerning mislocation of a Unit 2 structure was, in fact, a survey error which resulted in the Mechanical/Electrical Auxiliary Building concrete mat being one foot too narrow. This item had already been identified by the licensee.

In January and February 1979, an investigation (Report No. 50-498/79-01; 50-499/79-01) was conducted of allegations made by a former employee concerning installation and inspection of Cadwelds. Two of the six allegations were substantiated resulting in one item of noncompliance. Allegations that were substantiated included the copying over of dirty Cadweld Examination Checklists and entering the QC inspector's initials on the clean checklists by another person; and the acceptance of a Cadweld with excess voids in the filler metal. In May 1979, an investigation (Report No. 50-498/79-09; 50-499/79-09) was conducted of allegations concerning refusal of a QC inspector to sign a concrete pour card and widespread discrepancies in the Cadweld "as-built" location records. Both allegations were substantiated, but no items of noncompliance were identified. In September 1979, an investigation (Report No. 50-498/79-14; 50-499/79-14) was conducted of alleged intimidation of QC inspectors

by construction personnel and QA/QC program irregularities. Four of the ten allegations were substantiated resulting in an item of noncompliance and a deviation. Allegations that were substantiated, included the finding that holes were, in fact, left in walls of safety-related structures after removal of form ties; Lift 5 of the Unit 2 Reactor Containment Building contained Cadwelds that were not accounted for; an inspection report contained an unsigned and undated entry by a person other than the QC inspector; and a QC inspector was verbally instructed to disregard a stopwork notice.

In addition to the several investigations of allegations, an investigation of an altercation between a construction engineer and a QC inspector was conducted in May 1979, and was documented in Inspection Report No. 50-498/79-04; 50-499/79-04. The incident was confirmed, but licensee actions were considered appropriate and no items of noncompliance were identified.

Significant civil/structural problems identified and reported to Region IV by the licensee during 1978 and 1979, in accordance with 10 CFR Part 50.55(e), included unconsolidated concrete in the slab under the spent fuel pool in the Unit 1 Fuel Handling Building; a dimensional error in the base mat of the Unit 2 Mechanical/Electrical Auxiliary Building (MEAB2); placement of Category I backfill over a clay ramp in the MEAB2 area; concrete voids behind the liner plate in Lift 15 of the Unit 1 Reactor Containment Building (RCB) exterior

wall; and concrete voids in Lift 8 of the Unit 1 RCB wall. The voids in Lift 8 and later in other areas of the Units 1 and 2 RCB exterior walls were identified by the licensee as a result of Region IV concerns which were expressed following the discovery of the voids in Lift 15 of the Unit 1 RCB.

Region IV issued five Immediate Action Letters (IAL) to the licensee during the period January 1978 to November 1979. An IAL confirming a licensee imposed stopwork order on concrete placement in the RCB1 was issued in September 1978, The stop work resulted from problems concerning installation and inspection of Cadwelds identified during the investigation conducted in September 1978. An IAL concerning improper storage of reinforcing steel was issued in April 1979. The IAL was the result of reinforcing steel storage discrepancies identified during an inspection (Report No. 50-498/79-05; 50-499/79-05) conducted in April 1979. An IAL confirming a licensee imposed stopwork order related to placement of safety-related concrete was issued in June 1979. The stopwork order was the result of the discovery of concrete voids in Lift 8 of the Unit 1 RCB. Another IAL was issued in June 1979 which confirmed the partial release of the stopwork order for safety-related concrete but continued the stop work for RCB exterior shell wall placements. An IAL issued in September 1979 involved release of the stopwork order affecting RCB shell wall placements.

In addition to the ten investigations performed during the July 1977 to November 1979 period, a special Mid-Team QA inspection (Report No. 50-498/79-13; 50-499/79-13) was conducted during the week of August 6, 1979, on an

accelerated schedule. NRC participants in the inspection included two Region IV inspectors, the RRI designee from Region III, and an Inspection Specialist from Region II. Five items of noncompliance related to QA program implementation were identified during the inspection.

A Reactor Resident Inspector (RRI) was assigned to the South Texas Project on August 26, 1979, and assumed resident duties on September 2, 1979. On November 2, 1979, the RRI was contacted on site by a Brown and Root QC inspector who alleged that civil QC inspectors were being harassed and intimidated by Brown and Root construction personnel.

III

As a result of the allegations received on November 2, 1979, past allegations of a similar nature and repeated failures on the part of both HL&P and B&R to effectively correct poor construction practices, a special investigation effort was initiated. The purpose of this investigation effort, conducted over the period of November 10, 1979 to February 7, 1980, was to determine the validity of the recent allegations and to assess the effectiveness of the Quality Assurance/Quality Control (QA/QC) program at the South Texas Project (STP). The investigation team reporting directly to the HQ staff was comprised of an investigator and one inspector from the Region IV, one inspector each from the Region I and II offices and two from the Region III office.

The details of these findings are described in the investigation report No. 50-498/79-19 and 50-499/79-19. The items of noncompliance resulting from the special investigation are described in Appendix A of the transmittal letter of this Order.

The allegations of harassment, intimidation and lack of support of QC inspectors were substantiated during the investigation and demonstrate shortcomings in the management or poor management attitude and practices at the STP. Further, the results of the investigation establish that the QA/QC program at the South Texas Project is deficient and does not meet the standards required to assure that STP will be constructed to NRC requirements.

Procedural and programmatic inadequacies in the HL&P and B&R organization have resulted in a failure to identify quality problems and a failure to correct and prevent recurrence of identified problems. The lack of adequate control by B&R over safety-related activities and the lack of detailed involvement of HL&P in the total scope of activities associated with the STP has apparently been the reason behind these problems. This lack of detailed knowledge and involvement has hindered HL&P's ability to maintain adequate control of B&R, which for this facility is designer, constructor and provides the majority of the support personnel for the quality assurance/quality control program.

The South Texas Project QA management does not fully recognize the requirement for QA/QC organizational freedom. This is evidenced by a January 4, 1980 lecture by the B&R Project QA manager to the B&R site QA/QC and construction

and engineering supervisory personnel. This lecture which has not yet been revised repeatedly overemphasized the B&R QA/QC organization's responsibilities for minimizing project cost and maintaining the construction schedule. In addition, the lecture stressed the fact that a B&R QC inspector's decisions are subject to question, challenge and supervisory review and reversal.

The inspection of current activities and recent QA records indicate that the QA/QC program has not prevented recurrence of poor concreting practices that at times resulted in voids in structural concrete. A recent example of this was the lack of quality controls during the Unit 2 containment shell void evaluation in December 1979, which resulted in severe deformation of the containment liner.

Procedures lacking in clarity and qualitative acceptance criteria; personnel with inadequate training, experience and/or education; and production and scheduling pressures, harassment and intimidation may have contributed to this situation.

In the area of soil foundations, serious questions remain as to whether the inplace compacted backfill has met the required densities. When the licensee recently initiated a test program to provide answers to these questions, the QA/QC program failed to adequately review and control this operation, in that standard test requirements were not followed.

Although safety-related pipe welding activities are at an early stage at the STP, serious problems were identified in the areas of welder qualification, welding process controls and NDE performance and interpretation.

Improper implementation of the HL&P and B&R QA audits and surveillance programs and failure to perform continuous and effective trend analysis of site documents that record problem areas have allowed these conditions to persist.

During the review of backfill installation and testing activities two apparent false statements in the FSAR were identified regarding test and observation work actually performed. (Sections 2.5.4.5.6.2.4 and 2.5.4.5.6.2.5)

At the present time work involving complex safety-related concrete placement at the site is stopped as confirmed by an Immediate Action Letter from Region IV dated December 31, 1979 and safety related welding is stopped at the site as confirmed by an Immediate Action Letter from Region IV dated April 17, 1980. Potential for future significant construction deficiencies exist if the quality assurance program is not improved prior to proceeding to the more complex construction stages of this project.

IV

The facts set forth in parts II and III, above, reflect widespread noncompliance by the licensee and its principal contractor, Brown and Root, with 10 CFR Part 50, Appendix B, of the Commission's regulations. In view of this past record and the importance of quality assurance during construction of a nuclear power plant,

I have determined that the public health, safety, and interest requires that this Order be temporarily effective as of this date, pending further Order of the Commission.

V

A. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED THAT, the licensee, holder of Construction Permits No. CPPR-128 and No. CPPR-129, shall show cause , in the manner hereinafter provided, why safety-related construction activities on the South Texas Project, Units 1 and 2 should not be stopped ninety (90) days from the date of this Order and remain stopped until such time as the licensee completes the following items and submits in writing under oath to the Director, Office of Inspection and Enforcement information addressing each of the items:

(1) A review shall be conducted by an experienced, independent management consultant, knowledgeable in QA/QC and nuclear construction, of the licensee's management of the quality assurance program to determine whether the management of the program is adequate to exercise full control over all aspects of the South Texas Project. Consideration shall be given to the revision of organizational responsibilities to control the design, procurement and construction

activities of the licensee's prime contractor, Brown and Root, Incorporated (B&R). A discussion of the pros and cons of each concept shall be included. The alternatives considered shall include as a minimum:

(a) the present organizational structure where B&R has implemented a Quality Assurance/Control (QA/QC) Program, under the licensee,

(b) an organizational structure where all levels of the B&R QA/QC organization would report to the licensee yet remain B&R employees,

(c) an organizational structure where the licensee establishes a total QA/QC organization to conduct the current B&R QA/QC functions,

(d) an organizational structure where the licensee contracts with another independent organization to perform the current B&R QA/QC functions,

(e) an organizational structure where the licensee establishes a duplicate QA/QC organization, in whole or in part, to that of B&R with both groups performing duplicate functions.

A recommended course of action shall be defined by the licensee including the schedule for implementation. In evaluating the recommendations of the consultant in order to select the best concept, the licensee shall provide information on how it will exercise its overall responsibility for the QA/QC program including the management structure, the degree of involvement, qualifications, staff size, training, and experience. Of particular interest are the frequency and depth of participation of upper and middle management to assure that knowledge of the effectiveness of the QA/QC program is current, that such persons take the necessary actions to verify that the various QA staffs are effectively applying good QA controls, and that all personnel have the proper attitude and are applying the necessary attention to detail.

(2) A review shall be completed or new data obtained to provide information to address the following issues with respect to the Category I structural backfill:

(a) test fill program which established the soil conditions, lift thickness, compactive effort, and equipment characteristics necessary to develop the necessary in-place densities,

(b) comparison of material(s) tested and described in Section 2.5.4.8.3 of FSAR addressing liquefaction with those used in the field,

(c) the sequence of construction of existing backfill including the loose lift thickness and number of passes of the equipment,

(d) the adequacy of existing backfill material including that under structures founded on backfill,

(e) and the rationale behind the use of 18" loose lifts compacted by 8 passes of the equipment to achieve the required densities.

(3) A review shall be made of the safety-related work described below, completed as of the date of this Order to determine whether such work was properly performed. If repairs are required, describe the extent of the repairs necessary and the schedule for completion.

Also describe the manner in which the review was completed and extent of the review.

(a) Safety-related welding including civil-structural and piping.

(b) Safety-related concrete structures including embedments such as supports and the fuel transfer tube.

(4) The licensee shall cause the Brown and Root, Incorporated brochure titled, "Implementation of the Brown and Root Quality Assurance Program at the South Texas Project Jobsite," which was widely

distributed to site personnel and the subject of seminars on January 4, 1980, rescinded and the associated video tape to be destroyed or revised. Further, the licensee shall cause the republication of a new QA Program brochure which has been approved by the licensee which reflects the fundamental philosophies of 10 CFR Part 50, Appendix B, and conduct new seminars with Construction and QC personnel on the fundamental philosophies and standards of the licensee's QA Program with emphasis on the roles played by the respective personnel and the underlying purpose of the Program.

(5) The licensee shall define more clearly the stop work authority, temporary or otherwise, including implementation of the stop work authority.

(6) The licensee shall develop and implement a more effective system to provide for the identification and correction of the root causes of the nonconformances which occur.

(7) The licensee shall develop and implement a more effective system to provide for the control of field changes in order to assess the impact of the design changes on the design.

(8) The licensee shall develop and implement a more effective system of record controls.

(9) The licensee shall develop and implement an improved audit system.

(10) The licensee shall verify or correct if necessary, the FSAR statements contained in Section 2.5.4, Stability of Subsurface Materials, especially Section 2.5.4.5, Excavations and Backfill.

B. In addition, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Parts 2 and 50, IT IS HEREBY ORDERED THAT:

After the responses to Section A above have been submitted, the licensee shall participate in a public meeting with the NRC in a location near the South Texas Project site to discuss the licensee's response to that section of the Order. Senior representatives of Brown and Root will be expected to participate. The Director, Region IV, will inform the licensee and members of the public at least two weeks in advance of the specific time and location of the meeting.

C. The Director, Office of Inspection and Enforcement, will review the responses to Section A, above, to determine whether safety related construction will be conducted in accordance with Appendix B of 10 CFR Part 50 of the Commission's regulations, and may take, as appropriate, further action.

VI

The licensee may file a written answer to this Order under oath or affirmation within twenty-five days of the date of this Order. Any answer filed shall specifically admit or deny each allegation made in Section II and III, above, and may set forth the matter of fact and law upon which the licensee relies. The licensee or any other person whose interest may be affected by this Order may request a hearing within twenty-five days of this Order. Any request for a hearing shall be addressed to the Director, Office of Inspection and Enforcement, U. S. Nuclear Regulatory Commission, Washington, D. C., 20555, with a copy to the Executive Legal Director at the same address. If a hearing is requested by a person whose interest may be affected by this Order, the Commission will issue an Order designating the time and place of any such hearing. Such a request for a hearing SHALL NOT STAY THE TEMPORARY EFFECTIVENESS OF THIS ORDER. Upon failure of the licensee to file an answer within the time specified, the Director, Office of Inspection and Enforcement, will without further notice, issue an Order Suspending Construction Permit Nos. CPPR-128 and CPPR-129 if the required actions are not taken in the specified time period.

VII

In the event a hearing is held, the issue to be considered at such hearing shall be:

whether the licensee shall be required to take the actions specified in Section V(A), above, within 90 days of the date of this Order.

In the event that a need for further enforcement action becomes apparent, either in the course of the hearing or at any other time, appropriate action will be taken by the Director.

FOR THE NUCLEAR REGULATORY COMMISSION

Victor Stello, Jr.
Director
Office of Inspection
and Enforcement

Dated at Bethesda, Maryland,
this 21st day of April, 1980