

NOTICE OF VIOLATION

Commonwealth Edison Company
Braidwood Units 1 and 2

Docket No. 50-456
Docket No. 50-457
EA 84-35

As a result of the inspection conducted on June 20-21, June 27-July 1, August 1-5, August 9, October 4-7, October 24, 1983, January 11-13, January 25, and February 9, 1984, and in accordance with the NRC Enforcement Policy, 47 FR 9987 (March 9, 1982), the following violations were identified:

1. 10 CFR 50, Appendix B, Criterion XVI, as implemented by CECO QA Manual, QR No. 16.0, requires, in part, that measures be established to assure that conditions adverse to quality such as nonconformances 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.

Contrary to the above:

- a. 1/2" S/80, SA-312, Type 304, ASME Boiler and Pressure Vessel Code, Section III, Class 1, NB pipe heat number 745107 was discovered in Section III installations without material test reports or records of receiving and receipt inspections by either Commonwealth Edison Company or PGC Co as identified by PGC Co on September 17, 1982, on Nonconformance Report No. 789. The disposition of the Nonconformance Report resulted in accepting the pipe, after only obtaining material test reports, without examining the pipe, initiating and maintaining receipt inspection records, or determining the total quantity of the pipe in storage and installed.
- b. The HVAC contractor had not established a corrective action program to assure that conditions adverse to quality such as deficiencies and deviations were analyzed for significance and subsequently that the causes of any significant conditions were determined and corrective action taken to preclude repetition. Through August 4, 1983, 2,513 Correction Notices had been written by the HVAC contractor for deficiencies and deviations, including numerous welding deficiencies and deviations, but the contractor's Quality Assurance Program did not require that Correction Notices be analyzed for significance.
- c. Corrective action was not adequate concerning Nonconformance Report No. BR-08, dated June 15, 1981, since the nonconforming welds completed by unknown welders were "accepted-as-is" after only a visual examination. The acceptance of a weld by visual examination pursuant to AWS D1.1 is based on the fact that a qualified welder performed the welding in accordance with the qualified process.

This is a Severity Level IV violation (Supplement II).

2. 10 CFR 50, Appendix B, Criterion V, as implemented by the CECO QA Manual, QR No. 5.0, requires, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings, and shall be accomplished in accordance with these instructions, procedures, or drawings.

- a. Phillips, Getschow Company Construction Procedure 1.1, Revision 4, "Control of Engineering Change Notices and Field Change Requests," Section 5.3, requires that Document Control stamp applicable design documents with the field change request number.

Contrary to the above, Field Drawing M-2539C-4, Revision D, was not stamped with Field Change Request No. L-9194 and Field Drawing M-2542C-121, Revision A, was not stamped with Field Change Request No. 9988.

- b. Commonwealth Edison Quality Assurance Manual, Revision 77, Q.P. No. 7-1, "Control of Procured Material and Equipment - Receiving and Inspection," Section 5.2.1.5.7, "Dimensional," requires visual checks be performed on a random basis to assure that interface dimensions conform to drawings and/or specifications.

Contrary to the above, random visual checks of interface dimensions of piping components were not being done.

- c. Phillips, Getschow Company Quality Procedure-7, Revision 7, "Control of Inspection Equipment," requires in Section 7-9 that the Site Manager or Shop Superintendent maintain a log on each piece of calibrated inspection equipment listing all items inspected and person doing the inspection with each piece of inspection equipment.

Contrary to the above, there was no documented record or log specifying that a calibrated instrument was used to measure numerous pipe bends for ovality requiring inspection measurements to the thousandths of an inch. Examples include the bends on Drawings M-2546C-72, M-2546C-44, MC-2546C-42, and M-2546C-31.

- d. Phillips, Getschow Company Construction Procedure-4, Revision 0, "Control of Rework of Component Supports," requires in Section IV that upon issuance of revisions to component supports, the Field Superintendent shall initiate a Field Change Order to the Field Engineer when an ASME Section III, Subsection NF weld is involved.

Contrary to the above, Field Change Orders were not written for revisions involving ASME Section III, Subsection NF welds for component support Drawings M-1RH02017R, Revision E, and M-1SI16021X, Revision B.

- e. The L. K. Comstock Company/L. K. Comstock Engineering Company (LKC/LKCEI) QA Program Manual requires in Section 4.2 that voided documents (drawings) be returned to document control within 3 days.

Contrary to the above, drawings located in site document Station No. 5 were voided in that they were up to four revisions old and were neither returned to Document Control as voided drawings nor marked as being voided drawings for information only.

This is a Severity Level IV violation (Supplement II).

3. 10 CFR 50, Appendix B, Criterion II, requires, in part, that a quality assurance program be established which complies with the requirements of Appendix B and that the program be documented by written policies, procedures, or instructions and carried out in accordance with these instructions. The quality assurance program shall provide control over activities affecting quality and shall be accomplished under suitably controlled conditions including assurance that all prerequisites for the given activity have been satisfied including the need for special controls, processes, skills and the need for verification of quality by inspection. Criterion V requires, in part, that instructions be appropriate to the circumstances. Criterion IX requires, in part, that measures be established to assure that special processes, including welding are controlled and accomplished in accordance with applicable codes, standards, specifications, criteria and other special requirements.

CECo QA Manual, QR 2.0, Paragraph 2.3, required that the QA Program take into account the need for control of special processes including welding to attain and maintain the required quality. QR 9.0, Paragraph 9.4, required provision of process control records.

AWS D1.1-1977, Section 3, "Workmanship," as implemented by Sargent and Lundy (S&L) Specification F/L-2782, "HVAC Work," Amendment 7, requires, in part, that all applicable paragraphs of Section 3 be observed in the production and inspection of welded assemblies and structures produced by any of the processes acceptable under AWS D1.1-1977. Paragraph 3.4.3 of AWS D1.1-1977 requires, in part, that the contractor shall prepare a welding sequence for a member or structure which in conjunction with the joint welding procedures and overall fabrication methods will produce members or structures meeting the quality requirements specified.

AWS D1.1-1977, Section 6, "Inspection," requires that fabrication/erection inspections and tests be performed as necessary prior to assembly, during assembly, during welding, and after welding to ensure that materials and workmanship meet the requirements of the contract documents, including inspections to assure that electrodes are used only in the position and with the type of welding current and polarity for which they are classified and inspections to assure that the work meets the requirements of Section 3, "Workmanship," which includes fit-up and preparation of base metal prior to welding.

Contrary to the above:

- a. Instructions were not appropriate to the circumstances in that welding procedures specifying the essential variables were not prescribed on drawings or welding sequences (travelers) for each specific HVAC installation, and Quality Control inspections during the welding process were not of adequate scope and frequency to assure the use of correct welding variables.
- b. Quality Control was not required to examine the HVAC components for fit-up prior to welding on those components where fit-up tolerances cannot be determined after welding, such as all-around fillet welds and full penetration welds. Consequently there was a lack of records documenting the conformance with the requirements of AWS D1.1-1977, Section 3, and the CECO QA Manual. Additionally, instructions to the quality control inspectors regarding fillet weld gaps after welding were not appropriate to the circumstances in that the HVAC contractor Visual Weld Inspection Procedure, B10.2.F, stated that a 3/16" gap was acceptable whereas AWS D1.1-1977, Section 3.3, states that a 3/16" gap is allowed only if the leg of the fillet weld is increased by the amount of the separation or the contractor demonstrates that the required effective throat has been obtained.
- c. Quality Control was not required to examine the base metal prior to welding to assure that surfaces and edges were free of discontinuities. Consequently, there was a lack of records documenting conformance with the requirements of AWS D1.1-1977, Section 3, and the CECO QA Manual.

This is a Severity Level IV violation (Supplement II).

4. 10 CFR 50, Appendix B, Criterion XVIII, as implemented by the CECO QA Manual, QR No. 18.0, requires, in part, that a comprehensive system of planned and periodic audits be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program.

Contrary to the above:

- a. Phillips, Getschow Company has not established and executed a plan for auditing the implementing procedures of the quality assurance program on a periodic basis to determine the effectiveness of the program in accordance with the PG QA Manual, Section 16.
- b. L. K. Comstock Company/L. K. Comstock Engineering Company auditing activities neither conformed with the comprehensive annual schedule of planned and periodic audits established as required by QA Program Manual Section 4.14.1, nor did they verify compliance with all aspects of the Quality Assurance Program.

c. Pullman Construction Industries, Inc., did not meet their yearly schedule for audit activities required by their QA Manual, Section 18, in that the following implementing procedures were not audited:

- B 3.1.F, Design Control
- B 5.1.F, HVAC Repair Adjustment
- B 9.3.F, Expansion Anchor Installation
- B 10.2.F, Visual Weld Inspection

d. The licensee's audits of the installation of small bore instrumentation and process piping were inadequate in that contractor hanger design calculation problems were not identified for more than two years.

This is a Severity Level IV violation (Supplement II).

5. 10 CFR 50, Appendix B, Criterion VI, requires that measures be established to control the issuance of documents and these measures assure that changes to those documents are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed.

CECo QA Manual, QR No. 6.0, Paragraph 6.1, requires that a document control system be used, including changes, and the documents and changes be reviewed and approved for release by authorized personnel. QP No. 6-2, Paragraph 4.3.1, requires that field changes to drawings be submitted with a Field Change Request.

Contrary to the above, adequate measures had not been established to control field changes to drawings being made during the installation of ASME Boiler and Pressure Vessel Code, Section III, Class 2 and 3, 2" and under piping. Craft personnel had been making field changes to the drawings by rerouting lines, assigning weld numbers, and adding material which resulted in a lack of necessary control of approving, updating, and releasing drawings.

This is a Severity Level IV violation (Supplement II).

6. 10 CFR 50, Appendix B, Criterion II, requires, in part, that a quality assurance program be established which complies with the requirements of Appendix B and that the program be documented by written policies, procedures, or instructions and carried out in accordance with these instructions. The quality assurance program shall provide control over activities affecting quality and shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. Criterion III requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions and

that these measures include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Criterion III also requires that measures be established for the identification and control of design interfaces and for coordination among participating design organizations; that the measures include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces; and that the design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program."

CECo QA Manual, QR No. 2.0, Paragraph 2.2, requires that the QA Program be applied to safety-related systems in order to meet the requirements of ASME, Appendix B to 10 CFR 50, and certain provisions of ANSI N45.2 and N18.7. QP No. 3-1, Paragraph 2.0, required design requirements be applied and Paragraph 3-1 required the Architect Engineer (AE) review and distribute revised documents.

Sargent and Lundy (S&L) Specification F/L-2739, "Piping System Installation (Section III and Non-Section III)...Braidwood Station Units 1 and 2," Paragraph 301.11, "Installation of 2" and Under Piping," controlled the basic field routing of each 2" and under piping system, including site design of safety-related small bore piping classes B, C, and H for operating temperatures up to 150°F maximum and field alteration of original system layouts and field selection of supports/restraints by calculation based on A-E provided guidelines.

Contrary to the above, the licensee's control of site designed small bore (2" and under) process and instrumentation piping systems was considered inadequate and ineffective based on the following deficiencies:

- a. The programs and procedures established by the licensee and the A-E (Sargent and Lundy Engineers (S&L) prior to October 1983, did not provide sufficient assessments and verifications of Phillip, Getschow Co (PG) design capabilities prior to authorizing field routing of Class 2 and 3 small bore piping and field design of supports/restraints. The lack of assessments and verification resulted in inadequate understanding of the S&L specifications by PG to ensure the field routing of small bore piping was performed within the design requirements. Furthermore, the field routing of Class 2 and 3 small bore pipes, without detailed drawings being issued by S&L or PG, resulted in the licensee's established QA Program requirements being bypassed and prevented the timely identification of nonconforming conditions.
- b. The PG small bore pipe routing procedures lacked specific quantitative field design, installation, and inspection criteria to provide clearance and/or separation from equipment and components as required by S&L specification, F/L-2739, Paragraph 301.11.

MAY 7 1984

- c. Procedure PG CP 22 requirements had not been completely followed for small bore piping calculations performed by PG for lines 1CCE3AA- $\frac{1}{2}$ ", 1CCE3BA- $\frac{1}{2}$ ", 1DOD8BC-2", and 1DOD8BA-01.
- d. Field Engineer authorities, duties, and qualifications were not fully delineated in the PG QA Manual, Rev. 0, dated September 26, 1983, in that some of the specific work functions being performed by field engineering, such as pipe hanger design and calculation, were not adequately described.
- e. The PG training program was considered to be inadequate and ineffective based on the numerous errors identified in the PG hanger calculations.
- f. The use of the Information Request System by PG, in lieu of the Field Change Request (FCR) system, compromised the final design change acceptance review and approval.

This is a Severity Level IV violation (Supplement II).

Pursuant to the provisions of 10 CFR 2.201, you are required to submit to this office within thirty days of the date of this Notice a written statement or explanation in reply, including for each item of noncompliance: (1) corrective action taken and the results achieved; (2) corrective action to be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

FOR THE NUCLEAR REGULATORY COMMISSION


James G. Keppler
Regional Administrator

Dated at Glen Ellyn, Illinois
this ~~1~~ day of May 1984