

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-456/85052(DRP); 50-457/85050(DRP)

Docket Nos. 50-456; 50-457

License Nos. CPPR-132; CPPR-133

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, IL

Inspection Conducted: October 21 through November 30, 1985

Inspector: R. D. Schulz

W. J. Kropp

Approved By: *P.R. Little for*
W. S. Little, Director
Braidwood Project

12/6/85
Date

Inspection Summary

Inspection on October 21 through November 30, 1985 (Report No. 50-456/85052(DRP); 50-457/85050(DRP))

Areas Inspected: Routine safety inspection of licensee action on previously identified items, licensee action on 10 CFR 50.55(e) reports, plant tours, structural steel, and trending. The inspection involved a total of 186 inspector-hours onsite by two NRC inspectors, including 38 inspector-hours onsite during off-shifts.

Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

M. Wallace, Project Manager
*C. Schroeder, Licensing and Compliance Superintendent
*D. Shamblin, Construction Superintendent
*G. Groth, Assistant Construction Supervisor
G. Marcus, Assistant Manager Quality Assurance
*T. Quaka, Site Quality Assurance Superintendent
W. Vahle, Engineering Manager
S. Hunsader, Quality Assurance Supervisor
G. Fitzpatrick, Assistant Manager Quality Assurance Corporate
*L. Kline, Licensing and Compliance Supervisor
C. Gray, Project Construction Supervisor
*D. Skoza, Engineering Supervisor
J. W. Gieseke, Engineer
M. Gorski, Engineer
D. Boone, Project Construction Field Engineer
E. Wendorf, Engineer

Phillips Getschow Company (PGCo)

T. O'Connor, Site Manager
K. Kranz, Quality Assurance Site Manager
J. Stewart, Project Engineer
G. Galloway, Assistant Project Engineer
R. Hamilton, Welding Supervisor

G. K. Newberg Company

R. Donica, Quality Assurance Manager
P. Struckholz, Engineer

L. K. Comstock and Company, Inc. (LKC)

I. Dewald, Quality Control Manager
L. Seese, Assistant Quality Control Site Manager

Pullman Sheet Metal Works, Inc. (PSM)

R. Waterfield, Quality Engineer

Pittsburgh Testing Laboratory (PTL)

F. Forest, Site Manager

Sargent & Lundy (S&L)

D. A. Gallagher, Field Project Manager
K. Fus, Assistant Over-Field Coordinator

The inspectors also contacted other licensee and contractor personnel, including craftsmen, and technical and engineering staff members.

*Denotes those attending the exit meeting on November 27, 1985.

2. Licensee Action on Previously Identified Items

a. Violations

(Closed) 456/82-05-01; 457/82-05-01: Failure to correct bolting deficiencies of the 32 support columns for the steam generators in Units 1 and 2. A program was established to remove and either reinstall or replace all the cap screws. There were 192 cap screws for 16 support columns in each containment. PGCP-33, Revision 1, "Steam Generator Bolt Removal," and PGCP-34, Revision 0, "Installation Procedure For Main Steam Generator Support Bolts," were the controlling procedures for the corrective action activities. The procedures were reviewed by the inspector and found to be adequate for the installation and inspection activities. In-process removals and reinstallations were monitored by the inspector, and final inspections were performed on 102 cap screws in Unit 1 and 96 cap screws in Unit 2. The cap screws were found to be traceable to correct material specifications and installations were in accordance with established requirements. Inspections by the mechanical equipment contractor included:

- bolt thread condition
- bolt length
- heli-coil insert condition
- bolt hole size
- bolt head condition
- bolt torque

The inspector found the documentation to be accurate, reflecting acceptable field installations in accordance with drawing S-1112.

(Closed) 456/83-09-02c; 457/83-09-02c: Lack of documentation specifying that a calibrated instrument was used to measure numerous pipe bends for ovality. Procedure PGCP-11, "Cold Bending of 2" and Under Pipe and Tube," was changed in Revision 10 to require the documentation of the dial caliper on the quality control inspection form. The quality control inspector had documented the acceptability of the bend for ovality, but had previously not documented the dial

caliper on the form. This change made the identification of the dial caliper mandatory and thus it also became a final document review requirement under the stipulations of Procedure QCP-B30, Revision 3, "Storage, Maintenance, And Review of QA Records." In addition, the calibration records for the dial calipers that were used prior to the procedural changes were reviewed and all the calipers were within their proper calibration range. Implementation of revised Procedure PGCP-11 was audited by the licensee in QA Audit No. 20-84-518 and was found to be acceptable. Subsequently, the licensee took two random samples of 64 and 100 small bore installed piping bends and measured the bends for ovality. Six of the bends of the 64 samples were above 8%, but below 10.37%. Four of the bends of the 100 samples were above 8% but below 9.3%. The ASME Boiler and Pressure Vessel Code, Section III, NB-4223.2, states in part that evaluation is required if ovality exceeds 8%. The ten bends that were above 8% met the requirements of the stress report per Sargent & Lundy analysis. A selected sample of these calculations were reviewed and found to be acceptable by the inspector. Numerous piping bends have been examined by the inspector and all have been found to be visually acceptable.

(Closed) 456/85C-01; 457/85016-01: Unauthorized holes had been cut in three structural beams to permit the routing of nonsafety-related drain piping. Subsequent to the identification of these three beams by the inspector a complete inspection of the drain piping systems was accomplished by the architect engineer, Sargent & Lundy. This inspection identified 49 beams with holes that were either not shown on the design drawings or were cut different than design drawing requirements. All of the beams were found to be structurally adequate based on the as-built dimension. Beams 9AB513 and 8AB677N were reinforced by the licensee because the stress levels were close to exceeding the allowable stress. These two beams were reinforced with stiffener bars and angles in accordance with Engineering Change Notice No. 28509. The reinforced installations were examined by the inspector and found to be in accordance with the Engineering Change Notice. The modifications were controlled by Structural Steel Installation Traveler Nos. 8018 and 8019. The design calculations for nine beams not requiring reinforcement and one of the beams reinforced were examined by the inspector and found to be acceptable. The unauthorized holes in the beams appear to be isolated to the drain piping system. Numerous structural steel and piping inspections by the licensee, contractors, and NRC have been performed and similar problems have not been identified. Furthermore, present controls are adequate to preclude the unauthorized cutting of holes in beams by piping personnel. The piping contractor has instituted craft training programs which cover the proper use of field problem reports and the necessity to obtain engineering approval prior to modifying another contractor's work. The 49 beams were documented on Nonconformance Report 740 and the nonconformance has been appropriately closed.

(Closed) 456/85015-07; 457/85016-06: Repairs to coatings in the Unit 1 and Unit 2 containments were performed utilizing a coating

system not qualified in accordance with ANSI N101.2. The coating contractor issued Nonconformance Reports 23, 24, 25, and 26 to document and disposition the areas in the Unit 1 and Unit 2 containments, where repairs were done with a process not qualified to ANSI N101.2. The nonconformances were dispositioned "use-as-is" and were approved by Sargent & Lundy (S&L). The justifications for the disposition were documented by S&L on Design Information Transmittals (DITs) BR-SSD-0002-0 and BR-SSD-0005-1 and were found to be acceptable. These DITs documented that the square footage of the areas repaired was limited (less than 200). This area is identified by S&L on a coatings exception list which is being prepared for identifying unqualified coatings in the containments. The inspector also verified that the coating contractor, Midway, has a qualified coating repair procedure (C.P. 3A, Revision 4) approved by S&L.

(Closed) 456/83-09-08A; 457/83-09-08A: Phillips Getschow Company had not established and executed a plan for auditing the implementing procedures of the quality assurance program. Phillips Getschow Company revised their audit schedule on August 21, 1983, to include auditing all the implementing procedures annually. The inspector verified that audits are being performed in accordance with the audit schedule. A comprehensive review was accomplished by the licensee and piping contractor with regard to past auditing activities. Each implementing procedure approved for use at the site was analyzed against both the piping contractor's and licensee's audits. Based on this combination of audits, which were conducted to determine compliance with the Phillips Getschow Quality Assurance Manual and inherent overlap into the implementing procedures the review concluded that no questionable areas remained. The evaluation also took into account the nature of the task and retrofit programs which have been implemented. The inspector examined this comprehensive review and found it to be satisfactory for resolving the question of past auditing activities in relation to programmatic and regulatory compliance.

(Closed) 456/83-09-08C; 457/83-09-08C: Pullman Construction Industries, Inc. audit program did not cover all the implementing procedures. Pullman has implemented an audit schedule that provides for auditing the entire population of implementing procedures. The implementing procedures not previously covered and identified in 1983 included:

- B3.1.F, Design Control
- B5.1.F, HVAC Repair Adjustment
- B9.3.F, Expansion Anchor Installation
- B10.2.F, Visual Weld Inspection

Evaluations by the licensee and Pullman concluded that either the procedures were adequately implemented or corrective actions have been identified to assure compliance with the procedures. The evaluations are summarized below:

- Procedure B3.1.F has been adequately audited at the site based on:
 - Sargent and Lundy review and approval of all duct brochure details, all field and shop procedures, and all design documents.
 - Surveillances and audits performed by Pullman and the licensee.
- Procedure B5.1.F has been adequately audited at the site based on:
 - Licensee reviews which resulted in reinspection activities delineated in Nonconformance Reports 349, 353, 407, 460, 540, 558, 632, and 606.
 - Licensee reviews which resulted in the corrective actions required by 10 CFR 50.55(e) reports 82-01, 83-01, 83-08, and 84-08.
- Procedure B9.3.F has been adequately audited at the site based on the Pullman expansion anchor installation retro inspection performed in accordance with licensee Nonconformance Reports 658 and 659.
- Procedure B10.2.F has been adequately audited at the site based on:
 - Pittsburgh Testing Laboratory 10% overview of Pullman weld inspections.
 - Surveillance and audits performed by Pullman and the licensee.

The inspector found the evaluations thorough and supporting the adequacy of past construction activities.

b. Unresolved Items

(Closed) 456/84-08-06; 457/84-08-06: Three ASTM A-490 structural steel bolting connections were found in Containment 2 to have low torque values for some of the bolts in the connection. An engineering review was performed by Sargent & Lundy for all connections in both containments. The review concluded that only friction type connections, and not bearing type connections, required tightening to the original

torque, with allowable relaxation of minus 5% and minus 50 ft-lbs. Two of three connections the inspector originally identified were bearing connections and were sufficiently torqued to preclude loosening of the bolts or nuts. Additional inspections by Gust K. Newberg, subsequent to the NRC inspection, identified selected bolts in friction connections that were below the relaxation criteria. Therefore, the licensee replaced the ASTM A-490 bolts in all friction type connections. This replacement included 24 beam/column connections in Unit 1 and 28 beam/column connections in Unit 2. The reinstallation was documented on Structural Steel Installation Travelers (SSIT). Six SSIT packages for Unit 1 and four SSIT packages were reviewed for Unit 2. The SSIT packages reviewed were:

<u>SSIT No.</u>	<u>SSIT NO.</u>
7034	7051
7035	7052
7036	7053
7037	7054
7050	7055

Contractor quality control inspection reports and Pittsburgh Testing Laboratory torque inspection reports were examined.

The reinstallations were controlled by the travelers and inspection documentation met the requirements of the quality control procedures and Sargent & Lundy Structural Steel Specification L-2735.

(Closed) 456/84-09-09; 457/84-09-09: Lack of a documented training program for craft personnel. L. K. Comstock (LKC) Work Instruction, WI-4.1.3-01, "Training Of Craft Supervision And LKC Staff Personnel," was implemented on September 3, 1985. The Work Instruction stipulated a craft training program for each electrical discipline such as conduit, cable pan hangers, and concrete expansion anchors. Matrices were established that designated the procedures in which each electrical foreman was required to be proficient depending on his assigned work detail. Training records are maintained for each foreman. The training program appears to be sufficient to educate the craft foreman in the necessary controls to assure correct installations and to assure that appropriate documentation is completed.

(Closed) 456/85023-06; 457/85024-06: Lack of weld maps for hydrostatic tests. Piping Procedure PGCP-39, Revision 9, "Pressure Testing of ASME And Safety Related Piping," did not include a mandatory requirement that weld maps be included in the test package. Rather, the need for weld maps was left to the discretion of the project engineer. The ASME Boiler and Pressure Vessel Code, Section III, requires that all joints be inspected. Procedure PGCP-39 was changed in Revision 10 to require that weld maps be included in the test package. This change was requested by the ASME, Authorized Nuclear Inspector (ANI). Based on this change and discussions with the ANI and five quality control inspectors, the inspector determined that all welds had been examined during previous hydrostatic testing.

c. Open Items

(Closed) 456/85023-07; 457/85024-07: The piping contractor had not established measures to assure that piping lines would be hydrostatically retested after removal and replacement of items within the line. Piping Work Instruction, PGWI-38, Revision 0, "Review/Statusing Of Previously Pressure Tested Systems Due to Rework," was written and implemented to provide the necessary controls to assure that piping lines were retested when rework is performed on the pressure boundaries. The inspector found the procedural controls and implementation satisfactory. Documentation was maintained for all hydrostatic tests by date, including any subsequent rework which would necessitate an additional hydrostatic test.

(Closed) 456/85007-06; 457/85007-06: The electrical contractor's Procedure 4.9.6, "Equipment Maintenance Procedure," Revision A, required quality control to monitor maintenance activities at a minimum of five items per month. The procedure did not identify a specified time frame or priority system in which to monitor the electrical equipment that required preventive maintenance. This could result in some items never being monitored or items being monitored at a less than desirable interval. As a result of the inspector concern, the computer printout of all electrical equipment was revised to include a column listing the dates of inspection for each piece of equipment. This list is examined by quality control to assure that each piece of equipment receives adequate attention. The inspector found, by reviewing documentation, that maintenance was adequate. For the month of September 1985, approximately 40 inspections were performed instead of the mandatory five.

No violations or deviations were identified.

3. Licensee Action on 10 CFR 50.55(e) Reports

(Closed) 456/83-04-EE; 457/83-04-EE: Structural Steel Connection Rework. Original design requirements called for the burring of bolt threads after installation of nuts on sliding structural steel connections. These design requirements did not ensure a uniform and acceptable burring method. This necessitated the installation of a second nut, also called a jam nut. The jam nut was an added precaution to prevent the occurrence of the first nut becoming loose and disengaging from the connection. All field work and quality control inspection activities for the sliding connections are complete. The NRC inspector reviewed the documentation for 33 traveler packages for the Unit 1 containment and found the packages acceptable. Numerous installations were examined in both containments and no deficiencies were identified.

(Closed) 456/83-05-EE; 457/83-05-EE: The reactor trip breakers and reactor trip bypass breakers are Westinghouse Model DS-416. Due to a discrepancy in design, there is a potential for misoperation of the undervoltage (UV) attachment in the breakers. The width of the retaining ring on the two pivot shafts of the UV trip is not compatible with the width of the groove on the pivot shafts that receives the retaining ring.

This deficiency would increase the potential for misoperation of the DS-416 UV attachment, thereby creating a condition wherein the reactor trip breakers might not open on a signal from the reactor protection system. Westinghouse supplied replacement UV attachments for the DS-416 breakers. These replacement attachments have widened grooves to accommodate the new retaining rings. These new UV attachments were installed and tested in accordance with Westinghouse Field Change Notice (FCN) CCEM-10652. Equipment with new attachments are identified as follows:

- 1RD05E - Revision Work Request 3650
- 1RD05E - Revision Work Request 3651
- 1RD05E - Revision Work Request 3715
- 1RD05E - Revision Work Request 3716

(Closed) 456/83-15-EE; 457/83-15-EE: Pacific Scientific snubbers supplied with capstan springs may be defective and fail during a seismic event. All snubbers identified as having potentially defective capstan springs have been removed and returned to the vendor.

No violations or deviations were identified.

4. Plant Tours

The inspectors observed work activities in progress, completed work, and plant status during general inspections of the plant. Observation of work included high strength bolting, safety related pipe welding, HVAC duct work, HVAC welding, anchor bolts, structural welds, mechanical equipment installations, instrumentation racks, instrumentation piping, and cable trays in the containments and auxiliary building. Particular note was taken of material identification, nonconforming material identification, housekeeping, and equipment preservation. Craft personnel were interviewed in the work areas.

During one of the tours it was noted that motor control center 233X-2AP14E had a broken sight glass. The licensee was notified and the broken glass was cleaned up and a new sight glass installed. There was no damage to internal components. The inspector has no further concerns and considers this issue closed.

A pneumatic controller was found stored by the Unit 1 motor driven Auxiliary Feedwater Pump without the necessary identification to determine its construction status (removed, nonconforming, etc.). The licensee implemented immediate action and removed the controller to a designated area for repair. Also during this inspection period, five (5) ASME Section III, Class I valve bonnets and discs were noted as being stored in an undesignated storage area. In addition, two (2) of these discs were not readily traceable to their associated valves. The three valve discs with identification were for valves 1CV8379A, 1CV8323A, and 1CV8378A. The licensee implemented immediate action to store these bonnets and discs in a designated storage area and to identify the two discs which were not readily traceable to their associated valves. Other items and components were stored with these bonnets and discs. The licensee also implemented

immediate action to place these items in a designated storage area. Based on problems noted with the pneumatic controller and the storage of the bonnets and discs, the licensee has been requested to evaluate the system utilized by the mechanical contractor, Phillips Getschow, to control the removal of items or components. This matter is considered an unresolved item pending the review of the licensee's evaluation of Phillips Getschow material control program (456/85052-01; 457/85050-01).

5. Structural Steel

The inspector examined four (4) recently completed Structural Steel Installation Travelers (SSIT). The SSIT packages reviewed were:

<u>SSIT #</u>	<u>Date Issued</u>	<u>Date Inspected</u>	<u>S&L Drawing</u>
7957	9/30/85	10/7/85	S-1295
7959	10/2/85	10/14/85	S-685
7996	10/17/85	10/24/85	S-2113 S-2141
8001	10/18/85	10/24/85	S-2113 S-2141

Attributes examined by the structural steel inspectors included:

- structural member size and location
- plumbness, alignment and elevation
- welder I.D. stamp
- welding
- proper grade and number of bolts
- proper diameter/head location and thread projection
- proper number, type and location of washers
- material acceptance
- proper piece/mark heat numbers

Subsequently, the inspector performed an inspection of the material installed by these SSITs.

The documentation was accurate and reflected the actual installations. Material traceability was maintained and welding was noted as being acceptable. The installations met the requirements of the S&L drawings.

No violations or deviations were identified.

6. Trending

The inspectors reviewed the trending programs of site contractors G. K. Newberg and Pullman Sheet Metal (PSM). Both programs account for deficiencies identified by Pittsburgh Testing Laboratory during their unit concept inspection. In addition, the trending programs compare the data obtained in one quarterly trend report with previous trend report results. The trending program being implemented at PSM compares the amount of weld deficiencies identified on Correction Notices as a percent of the number of weld inspections conducted. Both contractor's trending programs appear to meet the requirements of 10 CFR 50, Appendix B, Criteria XVI, Corrective Action.

No violations or deviations were identified.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 4.

8. Exit Interview

The inspector met with licensee and contractor representatives denoted in Paragraph 1 during and at the conclusion of the inspection on November 27, 1985. The inspector summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.