

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/85058(DRP); 50-457/85054(DRP)

Docket Nos. 50-456; 50-457

Licenses No. CPPR-132; CPPR-133

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

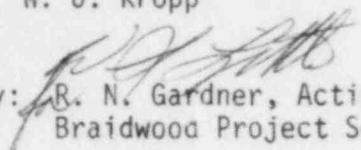
Facility Name: Braidwood Station, Units 1 and 2

Inspection At: Braidwood Site, Braidwood, Illinois

Inspection Conducted: December 2, 1985 through January 24, 1986

Inspector: R. D. Schulz

W. J. Kropp

Approved By:  R. N. Gardner, Acting Chief
Braidwood Project Section

2/6/86
Date

Inspection Summary

Inspection on December 2, 1985 through January 24, 1986 (Report No. 50-456/85058(DRP); 50-457/85054(DRP))

Areas Inspected: Routine, unannounced safety inspection of activities with regard to licensee action on previously identified items, licensee action on 10 CFR 50.55(e) reports, plant tours (cold hydro), piping, electrical construction, and coatings allegation meeting. The inspection consisted of 168 inspector-hours onsite by two NRC inspectors including 24 inspector-hours onsite during off-shifts.

Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- M. J. Wallace, Project Manager
- *P. L. Barnes, Regulatory Assurance Supervisor
- *D. L. Shamblin, Project Construction Superintendent
- G. E. Groth, Assistant Construction Superintendent
- *E. E. Fitzpatrick, Station Superintendent
- G. Marcus, Assistant Manager Quality Assurance
- *T. E. Quaka, Site Quality Assurance Superintendent
- S. Hunsader, Quality Assurance Supervisor
- *L. Kline, Regulatory Assurance Group Leader
- C. Gray, Project Construction Supervisor
- *D. Skoza, Engineering Supervisor
- M. Gorski, Engineer
- D. Boone, Project Construction Field Engineer
- D. Farr, Project Mechanical Supervisor

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

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

*Denotes those attending the exit meeting on January 24, 1986.

2. Licensee Action on Previously Identified Items

a. Violations

(Closec) 456/84-07-04; 457/84-07-04: Four L. K. Comstock (LKC) weld inspectors were not proficient in the American Welding Society Structural Welding Code, AWS D1.1-1975. This was evidenced by their inability to answer questions pertaining to the repair of weld cracks and fit-up tolerances. The licensee's corrective action consisted of conducting training for LKC QC inspectors in the AWS D1.1-1975 welding code and revising LKC Procedure 4.8.3, "Weld Inspection," to further clarify weld inspection requirements. The inspector verified that this corrective action was implemented by the licensee. The training of the LKC QC inspectors in the AWS D1.1 welding code was conducted on May 15, 1984, by LKC's Corporate Welding Engineer. LKC procedure 4.8.3 was revised to clarify weld inspection requirements and was effective May 15, 1984. The corrective action taken to avoid further noncompliance included

revising LKC Procedure 4.1.3, "Qualification Classification and Training of Quality Control Personnel," to include AWS D1.1-1975 as required reading. The inspector verified that LKC procedure 4.1.3 identifies AWS D1.1-1975 as required reading for weld inspectors.

In the response to this violation, dated August 20, 1984, the licensee stated that the LKC weld inspectors are competent and have been competent to perform their assigned weld inspection tasks and acknowledged that the weld inspectors had not received specific training in the AWS D1.1-1975 welding code. The licensee believed that this lack of specific training in AWS D1.1 occurred because the weld inspector training concentrated on the procedure used to perform the inspections which included the applicable AWS D1.1 requirements (LKC Procedure 4.8.3, "Weld Inspection"). To determine if the LKC weld inspectors, prior to the violation, were competent to perform assigned weld inspection tasks, the inspector reviewed documents with the following results:

- (1) LKC Procedure 4.8.3, Revision E, "Weld Inspection," in effect at the time of the violation, adequately delineated the requirements for weld acceptability. This procedure was reviewed and found acceptable by a regional specialist. This procedure was required reading for LKC weld inspectors.
- (2) LKC Welding Inspectors have previously identified discrepancies with weld fit-ups. The inspector reviewed three Inspection Correction Reports (ICRs) issued in 1984 which identified in an acceptable manner inadequate weld fit up or inaccessibility to verify fit up.
- (3) Nonconformance Reports (NCRs) were issued for identifying cracks in welds. The inspector reviewed five NCRs which were properly dispositioned. The dispositions included, where necessary, the required nondestructive examination and rework of the cracked weld.
- (4) Previous NRC inspections have not identified a programmatic problem with LKC inspection of welds. These previous inspections included a Construction Appraisal Team inspection (456/84-44; 457/84-40) which involved an assessment of LKC welding activities.

Based on the above, the inspector has determined that the LKC QC inspectors were competent to perform assigned weld inspection tasks and to identify any weld deficiencies. This item is considered to be closed.

(Closed) 456/84-07-06; 457/84-07-06: The licensee did not take appropriate corrective action with regard to an audit deficiency issued during their site QA audit QA-20-80-???. This audit deficiency pertained to a site contractor (Napoleon) not having a procedure for certifying QC inspectors. This audit deficiency was closed based on a procedure being developed and issued which delineated the certification process of the QC inspectors. The

corrective action for the audit deficiency did not require assessing the adequacy of the inspectors' qualifications for potential impact on work performed prior to the audit finding. The licensee's response to this violation documented the following corrective action:

- (1) A review of the educational background and training of each of the Napoleon Quality Control Inspectors employed at Braidwood prior to July 1980.
- (2) A review of deficiencies identified during their 1980 QA audits at Braidwood to assure properly documented close out. The focus of this review was to assure that the acceptability of past work was documented.
- (3) Revising commonwealth Edison's Quality Assurance Manual Procedures Q.P. 18-1, "Quality Program Audits," and Q.P. 18-51, "Audits for Operation - Quality Assurance Program Audits," to require that audit deficiencies shall only be closed after corrective action completion has been verified.
- (4) In an effort to reinforce the importance of addressing past work when closing audit items, coverage of the proper evaluation and documentations of past work in the close out of audit items was added to the training outline of the licensee's auditor training course.

The inspector evaluated each of the above corrective action items with the following results:

- (1) The Napoleon QC inspectors activities included final inspections of placement of reinforcing steel and the installation of post tensioning components. It was determined that these inspections were subjected to additional inspections by other site organizations. The installation of the reinforcing steel was also inspected by Gust K. Newberg (GKN) QC inspectors in accordance with GKN Quality Control Procedure, Section 8, "Placement of Reinforcing Steel." The inspector reviewed eight documentation packages and verified that GKN QC inspectors had verified the acceptability of the reinforcing steel placement. The inspector also verified that a QC inspector from Inryco, the supplier of the post tensioning materials, monitored the installation of the post tensioning components. These inspections were documented on Inryco "Weekly QC Reports." The Inryco field inspector verified that the following activities were acceptable:
 - Tendon placement
 - Button heading of tendons
 - Tendon stressing and
 - Greasing of tendons

Based on these overinspections of Napoleon's final inspections performed by other site organizations, there was no impact on work prior to the audit deficiency.

- (2) The licensee's review of the closing of audit deficiencies identified during their 1980 QA audits at Braidwood was expanded to audit deficiencies issued during their 1981 audits. This expanded review was to provide additional assurance that past work has been adequately addressed. This review determined that past work was addressed, did not require to be addressed because of the nature of the audit deficiency, or was in the process of being resolved. The inspector reviewed several of these audit deficiencies and concurred with the licensee's assessment.
- (3) The inspector verified that Q.P. 18-1 and Q.P. 18-52 were revised to required audit deficiencies to be closed only after corrective action has been determined to be implemented.
- (4) The inspector verified that the training outline of the licensee's auditor training course covered the proper evaluation and documentation of past work in the close out of audit items. In addition, the format for deficiency write-ups have been revised to address any impact on previous work. An inspection by regional personnel in September 1985 (456/85046; 457/85045) verified that this corrective action was effective. This item is considered to be closed.

(Open) Violation 456/84-44-04; 457/84-44-04: Fasteners utilized in Class 1E seismic cable tray hangers and battery racks did not always meet the requirements of ASTM A307 in regards to the manufacturer's identification marking. Some of the corrective action had been evaluated and verified for implementation during the inspection period documented in Inspection Report 456/85032; 457/85031. The inspector, assisted by a regional specialist, reviewed the test results for sixty (60) fasteners selected from various installations. The sixty fasteners tested were in addition to the sixty fasteners selected from storage which were previously tested. The disposition of the licensee's Nonconformance Report (NCR) 692, which identified this deficiency in the ASTM A307 fasteners, was reviewed by Sargent & Lundy and appropriate licensee personnel. The disposition was "use as is" based on the results of the product audit (testing of 120 fasteners). The inspector has determined that the corrective action and disposition documented on NCR 692 was adequate. The inspector reviewed NCR 783, which was issued December 2, 1985, that identified unmarked A307 bolting in vendor supplied equipment. This NCR does not yet have an approved disposition. The inspector will review the disposition once it is approved by the appropriate licensee personnel. This violation will remain open pending the adequate closure of NCR 783.

(Closed) 456/85007-08; 457/85007-08: The piping contractor did not have a procedure or documented instruction stipulating a systematic method for producing an accurate Inservice Inspection drawing.

The corrective action consisted of revising Commonwealth Edison Procedure PCD-25, "Distribution And Control Of Site Preservice Inspection Drawings." The change was included in Section 4.1 and stated, "The PSI Isometric's drawings shall include all the attributes detailed on the ISI checklist (Attachment B)."

A supplemental response from the licensee to the NRC was issued on January 24, 1986, and stated that the ISI checklist would be used by Phillips Getschow piping personnel and a letter from the Project Construction Superintendent to Phillips Getschow on January 26, 1986, notified the contractor of this requirement.

In addition the supplemental response stated that the licensee has and will continue to review the drawings for conformance with preservice conditions, including the fact that examination crews walkdown the drawings while performing the baseline volumetric and surface examinations. This item is considered to be closed.

(Open) 456/85015-06: The licensee's Quality Assurance Department inappropriately closed Nonconformance Report (NCR) 600 and as a result did not assure that conditions adverse to quality were corrected. Part of the licensee's corrective action and corrective action to preclude recurrence was evaluated and verified for implementation during the inspection period documented in Inspection Report Nos. 456/85032; 457/85031. The inspector evaluated and verified further licensee corrective action pertaining to this violation. This corrective action consisted of the licensee's QA department performing an independent review of ten NCRs closed during the same time frame as NCR 600 (September 1984). This review included verification that the corrective actions were complete and effective. The review also addressed proper identification, documentation, and disposition of the selected NCRs. The NCRs reviewed by the licensee were: NCRs 511, 366, 623, 570, 468, 437, 569, 332, 424, and 483. The inspector also reviewed the NCRs and their supporting documentation and determined that they were properly closed. The licensee's QA department identified clarifications which were required for some of these NCRs. These clarifications had no technical effect on the disposition of the NCR (typographical errors, blocks left blank instead marked "N/A," etc.). The inspector also selected five other closed NCRs to verify the effectiveness of licensee's review. These NCRs were:

<u>NCR</u>	<u>Issued</u>	<u>Closed</u>
521	6/84	9/84
591	1/84	8/84
648	8/84	12/84
726	2/85	8/85
743	5/85	10/85

The inspector verified that these NCRs were also dispositioned and closed in a proper manner. Based on the ten NCRs reviewed by the licensee and the five NCRs selected and reviewed by the inspector, the improper closure of NCR 600 has been determined to be an isolated case. However, this violation will remain open pending the closure of NCR 600 which was reopened to resolve any hardware deficiencies. The closure of NCR 600 will then be evaluated by the inspector to ensure that any hardware deficiencies pertaining to ASME Class I supports have been adequately resolved.

b. Unresolved Items

(Closed) 456/84-13-05; 457/84-13-05: Two spent fuel storage racks were damaged. One of the rack's flare plates at the end of the alignment box was bent. The other rack had slightly deformed support beams. Sargent & Lundy analysis and the fabricator's inspection of the deformed beams supported an acceptance of the beams in their present condition. The slight deformations will have no effect on the functional aspects of the rack and no safety significance exists. Cell number nineteen was free path tested and met the acceptance criteria of the drag force required to insert and remove the assembly from the cell. The damaged flare plates have been removed and replaced. The three welds made for the repairs were visually inspected by the licensee's Quality Assurance department and found acceptable. This item is considered to be closed.

(Closed) 456/84-13-07; 457/84-13-07: Documentation for the spent fuel storage racks and failed fuel rack was missing. This documentation was subsequently found at the fabricator's shop. The documentation was reviewed and found to be in conformance with specifications 5106-M-200 and F/L-2743. Documentation reviewed included:

- Welding Records
- Visual Inspection Procedure 763, Revision 1
- Joint Preparation Inspection Records
- Surface Roughness Inspection Records
- Penetrant Test Reports
- Certified Material Test Reports (Components and Welding Material)
- Functional Free Path Test Inspection
- Dimensional Acceptance Reports
- Cleanliness Acceptance Reports

Penetrant Test Report No. 3913 was traceable to the failed fuel rack assembly

This item is considered to be closed.

c. Open Items

(Closed) Open Item 456/84-07-01; 457/84-07-01: Conflict between licensee directive BRD 7921 and Regulatory Guide 1.58 which endorses ANSI N45.2.6 (1978), "Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants." The licensee issued a directive BRD 12,256 on July 11, 1984, which transmitted to site contractors a site standard for qualifying and certifying personnel to ANSI N45.2.6 (1978). This standard required the site contractors to use the education and experience as stated in ANSI N45.2.6 except for the requirement that personnel have a high school diploma or GED equivalent (this is an NRC approved exception noted in Appendix A in the FSAR). Licensee Procedure PM-12, "Qualification/Certification of Contractor Personnel Performing Inspection Services at the Braidwood Station," clearly establishes the qualification and certification requirements for site contractor QC personnel. This item is considered to be closed.

(Open) 456/85023-05; 457/85024-05: Thirteen structural steel bolted connections had torque values below the installation torque, and turn-of-the-nut-installations were subject to fluctuations in foot-pound torque. The licensee analyzed these 13 connections and found the discrepant torques not to be design significant, based on the connections being "bearing" type connections in which the joint does not rely on the friction developed by the pre-tensioning torque to transfer forces. Furthermore, additional training was given to the craftsmen to assure proper tightening of future installed structural connections. These training records were reviewed by the inspector and were found to be adequate. However, based on the fluctuations in the turn-of-the-nut-installations, the licensee will reinspect all "slip-critical connections," which were tightened by the turn-of-the-nut method. For "slip-critical" connections the friction force developed by pre-tensioning is required to prevent the connection from slipping. Pending the completion of the reinspection this issue will remain open.

No violations or deviations were identified.

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

(Closed) 456/84-06-EE; 457/84-06-EE: A leak in the bottom of the Recycle Holdup Tanks, OAB01TA and OAB01TB, was caused by lap joint welds with weld crevices and foundation sand which provided an environment that promoted bacteria growth leading to accelerated corrosion. As corrective action measures the licensee:

replaced the sand bed with concrete fill

- replaced the tank floor utilizing butt welded joints rather than the existing lap joint fillet welds

The NRC examined the tank bottoms and reviewed the final documentation package including:

- Code Data Reports
- Hydrostatic Test Report
- Nondestructive Examination Personnel Qualifications
- Vacuum Box Test Report
- Welding Records
- Nondestructive Test Reports

This item is considered to be closed.

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, reactor coolant pipe welding, HVAC welding, anchor bolts, structural welds, mechanical equipment installations, piping spool transfers, instrumentation racks, instrumentation piping, and cable trays in the containments and auxiliary building. Particular note was taken of material identification, nonconforming material identification, and housekeeping. Craft personnel were interviewed in the work areas.

On January 23, 1986, the licensee completed a cold hydro on the reactor coolant system, pressurizer system, chemical and volume control system, safety injection system, and residual heat removal system. The hydro was a partial retest for all replacement material and repair welds. The original cold hydro was completed on August 4, 1983. The pressure was held at 3107 psig for ten minutes and then the applicable welds were examined for leakage at 2485 psig. The cold hydro was reviewed for compliance with:

- Fill Vent and Heatup Procedure BwPT-RC-24
- Cold Hydro Procedure
- ASME Boiler and Pressure Vessel Code, Section III, Subsection NB-6000
- PGCP-39, Pressure Testing of ASME and Safety Related Piping

Both the resident inspectors and regional based inspectors witnessed the cold hydro.

The cold hydro was deemed to be satisfactory with the exception that several valves were found in an incorrect position (closed vs. open), by the piping contractor. The incorrect position of these valves will be evaluated to determine if some of the welds were not subject to either the cold hydro test pressure or were not tested on the original cold hydro date of August 1983. This evaluation by the piping contractor, to determine if an additional partial cold hydro test is required, will be reviewed by the NRC. Weld maps were used by the weld inspectors and the welds were identified with yellow tape to assure that all welds were visually inspected.

No violations or deviations were identified.

5. Piping

A 3" piping line, 1CV01FB-3," was walked down between valve 1CV8401B and letdown heat exchanger 1CV04AA. Field examinations included identification of welder symbols and weld numbers, weld quality, material identification markings, configuration, clearances, and line location in accordance with the as-built drawing, 1A-CV-10.

After field installations were inspected, the inspector reviewed the following associated documentation and determined the installations met regulatory requirements:

- Piping, NPP-1 Code Data Reports
- Valve, NPV-1 Code Data Reports
- Welding Filler Metal Material Certifications
- Piping Material Certifications
- Weld Numbers and Welder Qualification Records
- Welding Procedure Qualification Records
- Nondestructive Examination Reports, Penetrant and Radiograph.
- Quality Control Inspection Records Including End Preps, Fit-up, Root Weld, Pre-Heat, Interpass Temperature, and Final Visual Weld Examinations.

No violations or deviations were identified.

6. Electrical

The inspector reviewed the licensee's activities pertaining to construction of electrical raceways in the Unit 2 containment. The construction of electrical raceways in the Unit 2 containment has been assigned by the licensee to Gust K. Newberg (GKN). The inspector reviewed the procurement change documents for this new scope of work. The contract change documents require the work to be performed in accordance with Sargent & Lundy Specification L-2790A, "Electrical Installation Work - Braidwood Unit 2." The inspector reviewed the interim approval GKN Quality Control Procedures for compliance with applicable regulatory requirements, codes and standards. No problems were noted. The quality control procedures reviewed were:

- Section 2, "Training Program"
- Section 3, "QAM and QC Procedure Control"
- Section 5, "Deviation/Nonconformance Reports"
- Section 6, "Control of Measuring and Test Equipment"
- Section 8, "Receipt, Storage and Issuance of Safety Related Materials"
- Section 11-1, "Weld Repair"
- Section 14, "Installation and Inspection of Conduit Junction Boxes, Pull Boxes, Wireway, Terminal Boxes and Their Supports"
- Section 15, "Installation and Inspection of Cable Pan"

No violations or deviations were identified.

7. Coatings Allegation Meeting

(Open) Allegation (RIII-86-A-0008): On January 23, 1986, a meeting was held by the licensee to discuss the disposition of certain nonconformance reports (NCRs) issued by the coatings site contractor (Midway). This meeting was attended by key personnel of the licensee's staff, Sargent & Lundy (S&L) personnel involved in the disposition of the NCRs and NRC personnel.

The NCRs discussed at this meeting identified a deficiency in the coatings for the Unit 1 and 2 containments in that the coatings were not applied in accordance with the manufacturer's recommendations. The S&L disposition of these NCRs were "use-as-is." This disposition was based on pull test results which are used to determine the adhesiveness of the coating system.

The licensee presented their position as to why pull tests, used as a basis for dispositioning the NCRs, was acceptable in lieu of performing Design Basis Accident (DBA) testing in accordance with ANSI N101.2, "Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities." As a result of this meeting, the licensee committed to submit data which supports their position to NRR for review.

No violations or deviations were identified.

8. Exit Interview

The inspector met with licensee and contractor representatives denoted in Paragraph 1 during and at the conclusion of the inspection on January 24, 1986. 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.