

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-456/86015(DRS); 50-457/86013(DRS)

Docket No. 50-456; 50-457

License 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, IL

Inspection Conducted: March 5 through 21, 1986

Inspectors: *James W. Muffett for*
R. Mendez

Z. Falavits
Z. Falavits

May 2, 1986
Date

May 2, 1986
Date

Approved By: *James W. Muffett*
J. W. Muffett, Chief
Plant Systems Section

May 2, 1986
Date

Inspection Summary

Inspection on March 5 through 21, 1986 (Reports No. 50-456/86015(DRS);
No. 50-457/86013(DRS))

Areas Inspected: Routine, unannounced inspection of licensee action on previous inspection findings, a 50.55(e) report; and instrument and control cables and terminations. IE inspection procedures reviewed during this inspection included 30703B, 52054B, 52064B, 52065B, 52066B, 099020B, 92701B, and 92702B.

Results: Two violations were identified (Improper Inspection 4.a; and failure to follow Procedure 4.b).

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DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- *D. L. Shamblin, Project Construction Superintendent
- *P. L. Barnes, Regulatory Assurance Supervisor
- *D. A. Hoffer, Quality Assurance Supervisor
- N. P. Tomis, Operational Analysis Supervisor
- *T. W. Ronkoske, Field Engineer
- D. L. Cecchet, Regulatory Assurance
- *N. A. Schryer, Project Construction Consultant
- J. W. Giesecker, Project Construction Engineer
- *L. J. Tapella, Project Construction Engineer
- K. Faber, Project OAD Engineer
- J. F. Phelan, Project Field Engineering Supervisor
- A. J. D'Antonio, Regulatory Assurance
- G. E. Groth, Assistant Construction Superintendent
- N. N. Kaushal, Project Field Engineering Manager
- G. M. Orlov, Staff Assistant to Project Manager
- J. A. Zych, Quality Assurance

L. K. Comstock Company (LKC)

- *D. Sheppard, Project Administrator
- *L. J. Szumski, Project Engineer

*Denotes those attending the March 21, 1986 exit interview.

The inspectors also contacted and interviewed other licensee and contractor personnel during this inspection.

2. Licensee Action on Previous Inspection Findings

- a. (Closed) Unresolved Item (456/83018-13): It was previously identified that the licensee failed to document the receipt inspection of containment spray pump motors 1CS01PA and 1CS01PB, purchased under S&L Specification L-2719 and Purchase Order (P.O.) No. 198129. Records indicated that containment spray pumps were received without damage on September 5, 1978. This was documented on Material and Equipment Receiving and Inspection Report (MRR) No. 2800. MRR No. 2800 documents pump P.O. No. 190277 and pump S&L specification 2758B but not the motor P.O. or specification. The inspector reviewed Revision 5 of Material and Equipment Receiving, Inspection, Storage Removal Inventory Instruction, Procedure BG-3, as it existed at the time the pumps were receipt inspected. A review of a copy of Revision 5 of Procedure BG-3 does not address filling out a separate MRR for each P.O.

Shipping documents and correspondence between the supplier (Westinghouse) indicate the pumps were assembled complete and connected to Westinghouse motors. Additionally, documentation exists which shows the correct motors were connected to the right pumps and that receipt inspection MRR No. 2800 was performed for the pump with the motor attached. Although there is a lack of specific documentation concerning the containment spray pump motor P.O. and specification, there is evidence to indicate that the motors were receipt inspected.

- b. (Closed) Unresolved Item (456/84004-01; 457/84004-01): It was previously identified that the battery charger anchor bolts were bent and out of plumb. Drawing detail 8745 on S&L Drawing No. 20E-0-3391N called for beveled washers to be installed between the battery charges 1DC03E, 1DC04E, 2DC03E, and 2DC04E and their mounting channels. These beveled washers had not been previously installed causing the anchor bolts to be bent out of plumb. Subsequently, Newberg Construction Company issued Nonconformance Report (NCR) No. 213-803 on June 18, 1984, which required the electrical contractor (LKC) to rework the installation of the battery chargers to the referenced S&L drawings. S&L reviewed the recommended disposition and approved it on August 1, 1984. Records indicate that the four battery chargers were reworked and QC inspected in December 1984. The inspector examined battery chargers 1DC03E and 1DC04E and found them to be installed per Detail 8745 of Drawing 20E-0-3391N.
- c. (Closed) Unresolved Item (456/84029-03): It was previously identified that on June 11, 1984, a QC inspector signed an LKC Equipment Installation Report, Form 4.8.13, under QC Level II review, although the QC inspector was not certified in the area of equipment installation. The subject QC inspector was certified, however, in the area of conduit configuration. Prior to September 28, 1984, LKC procedures required that when a Level II inspector reviewed the documentation of another Level II, the review was for format and completeness. In the particular case noted above, the actual inspection was accomplished by a certified Level II and therefore was technically acceptable at that time. On September 28, 1984, LKC revised their procedures to require that a Level II review must be performed by an inspector certified in the discipline covering the subject inspection document that was being reviewed. On September 29, 1984, LKC management instructed QC inspectors not to sign off the review column unless they are certified in that area. Since the QC inspector signed the checklist on June 11, 1984, and not after September 28, 1984, it was not a violation of procedures, and this incident does not represent a violation.
- d. (Open) Violation (456/84044-03; 457/84040-03): It was previously identified that over 10,500 feet of General Electric (GE) switchboard wire was received at the Braidwood site but was not qualified to IEEE 383-1974. Although 10,500 feet of GE SIS SI57275 (Vulkene) wire was received at Braidwood, the majority of the wire was installed

internal to plant switchgear. The use of Vulkene wire internal to switchgear located in the Auxiliary Building is acceptable. However, some of the Vulkene wire was possibly installed in containment, the steam tunnel area, and in junction boxes and in harsh environment in the Auxiliary Building. On January 9, 1985, the licensee issued NCR No. 707 which required that all GE SIS SI57275 wire (Vulkene) in these areas be removed and replaced with Rockbestos Type SIS wire. The licensee initiated walkdowns of the plant to identify any unqualified wire or wire with an indeterminate status. The licensee has essentially completed their walkdowns (except for three junction boxes) and has identified approximately 80 jumper wires of indeterminate status. The licensee indicated they plan to replace all of these jumper wires. The NRC inspector walked down a selected sample of these components in containment and the Main Steam Tunnel. All installations inspected were acceptable.

3. Licensee Action on a 10 CFR 50.55(e) Report

- a. (Closed) 10 CFR 50.55(e) (456/80001-EE): "Intermittent Contact Operation of W-2 Switches." The licensee identified an intermittent contact operation problem with W-2 switches. Subsequently, the manufacturing process for the switches was revised to include steps to reduce contamination during assembly of the switch contacts. The licensee indicated that by November 20, 1985, all field work to replace W-2 switches was completed for Unit 1. During a previous inspection (see inspection report 50-456/86005; 50-457/86004), the inspectors reviewed LKC rework travelers and QC inspection checklists pertaining to the removal of the original W-2 switches and installation of new W-2 switches. Additionally, the inspectors toured the auxiliary building and verified that the new W-2 switches matched the required material receipt inspection numbers. During this tour the inspectors observed that the identification numbers inscribed on the W-2 switches on the diesel generator panels 1PL07J and 1PL08J did not match the required receipt inspection number. The licensee's letter dated April 30, 1982, in response to this 50.55(e) item, stated that all W-2 switches in safety-related equipment would be replaced. However, on August 29, 1984, the licensee issued an additional letter which clarified the licensee's position on Bulletin 80-20 (Braidwood 50.55(e) item 80001 and IE Bulletin 80-20 identify the same problem with W-2 switches). Bulletin 80020 was closed in Braidwood Report No. 456/80020; 457/80021 based on the licensee's actions to resolve 50.55(e) 456/80001-EE. The licensee's August 29, 1984, letter provided justification in accordance with Bulletin 80-20 for not changing all W-2 switches. An attachment to this letter documented the W-2 switches excluded from the licensee's replacement program properly and the basis for exclusion. The diesel generator panels 1PL07J and 1PL08J were excluded from the licensee's replacement program. The licensee's actions are complete and acceptable per the required actions of Bulletin 80-20 and also adequately close this 50.55(e) item.

4. Instrument and Control Cables and Terminations

- a. On March 5, 6, 20, and 21, 1986, the inspectors conducted a document control and field visual inspection to ascertain the licensee's implementation of revisions to design drawings. During the field inspection the inspectors noted that two external conductors were terminated at Terminal 21 and two conductors at Terminal 22 of ESF MCC 131X Compartment B4. This compartment is used for "Service Containment Spray Pump 1A Suction Valve 1CS001A." The inspectors reviewed applicable connection diagram 20E-1-4661B, Revision J, dated April 5, 1983, and schematic diagram 20E-1-4030CS03, Revision D, dated March 31, 1985, which indicated that Terminals 21 and 22 of ESF MCC 131X1 Compartment B4 were spare terminals. Prior to Revision D of schematic diagram 20E-1-4030CS03, Valve 1CS001A limit switch contact 14-14C (LS/C) was used to interlock the starting control circuit of Containment Spray Pump 1A as was shown on schematic drawing 20E-1-4030CS01, Revision J. The revisions to the schematic and connections diagrams dated April 15, 1983, required that associated wiring of Valve 1CS001A limit switch 14-14C be removed in the field. As of March 5, 1986, control room panel 1PM06J field wiring agreed with the drawing requirements. However, the NRC inspectors observed that MCC 131X1 Compartment B4 and Valve 1CS001A limit switch 14-14C were still field wired contrary to the drawing requirements. The inspectors noted that the identical changes to the circuitry of Loop B, Containment Spray Pump 1B, have been implemented in the field in a timely manner.

L. K. Comstock Procedure 4.3.16, "Revision/Work Request of All Electrical Equipment," Revision F, Paragraph 3.1 states that "L. K. Comstock and Company (LKC), shall be responsible for completing all revisions noted on the latest S&L drawings, or as directed by CECo's PCD, OAD, or IM Departments." Paragraph 3.2 states that "CECo's PCD shall generate and forward a Revision/Work Request (RWR) to LKC Engineering for work except when work results from a revised S&L drawing ..." The inspectors noted that LKC engineers are not required to initiate RWRs for field external connections as required for internal connections. The methodology used to determinate or reterminate external conductors, as delineated in the revised design drawings, is denoted in LKC Cable Termination Installation Procedure 4.3.9, Revision F, Paragraph 3.1 as follows: "Revisions to wiring after initial termination shall be directed by CECo OAD." Discussions with OAD engineers revealed that to implement a revision to a drawing, the system OAD engineer has to inform LKC that a revision has to be implemented in the field. If the OAD engineer fails to inform LKC craft of the required rework required by the revision, the LKC engineer is not allowed by procedure to complete the required change to the drawing. Therefore, the OAD engineer's direction to LKC is the only means for field implementation of external connection modifications per revised design drawings. OAD Training Instructions A-1, Page 1, state that "If the system is not at current revision at the time of SDP processing, a deficiency should be generated by the OAD system engineer." At the time of this inspection no deficiency report has been generated to incorporate

the changes made to these drawings for the subject revisions dated April 15, 1983. In addition, review of termination cards for Cables 1CS046 and 1CS047 indicated that although the number of conductors terminated in the field was in agreement with the ones shown on the termination card, none agreed with the design drawing requirements.

L. K. Comstock QC Inspection Checklist of Electrical Terminations for Cable 1CS046 dated October 18, 1985, and for Cable 1CS047, dated December 23, 1985, documented that both cables were inspected against drawing revisions that were issued subsequent to the subject revisions dated April 15, 1983, indicating that the wiring associated with Contact 14-14C of Valve 1CS001A is to be removed. Terminations of these cables were found to be acceptable during this LKC inspection even though external conductors still existed in the field contrary to the drawings' requirements. Furthermore, cable retermination card for Cable 1CS046 dated October 3, 1985, and Cable Retermination card for Cable 1CS047 dated December 20, 1985, denoted that during the retermination of these cables in October and December 1985, the LKC inspection of the cables against the applicable connection diagram did not identify the existence of the external conductors contrary to the requirements of the design drawings.

The inspector informed the licensee that the existing system to assure conformance with applicable drawings did not function in this instance. This practice is contrary to 10 CFR 50, Appendix B, Criterion X, which requires that inspections be performed to verify conformance with applicable drawings (456/86015-01).

- b. During a field verification of wiring diagram 20E-1-4687H, the inspectors observed that in Motor Control Center (MCC) 132X4, Panel H, the connection on relay contact points 9 and 10 had not been installed on relays CRVQ1BX and CRVQ2BX per the wiring diagram. Schematic diagrams 20E-1-4030QV17 and 20E-1-4030QV18 show that the connections mentioned above interlock the control circuit of the primary containment purge isolation valves 1QV001B and 1QV002B, respectively. If the discrepancy had remained undetected, manual control of the valves may have been lost. L. K. Comstock Engineering reviewed the Revision/Work Request (RWR) file for drawing 20E-1-4687H to determine whether the design change had been identified or documented on a RWR. A review of the RWR revealed that no RWR had been written for Revision H, dated July 14, 1983, of Drawing 20E-1-4687H which would have documented the connections on Relays CRVQ1BX and CRVQ2BX, although, RWRs had been written for Revisions J and K of the wiring diagram. L. K. Comstock (LKC) Procedure 4.3.9, Cable Termination Installation, states in part, "Internal wiring diagram revisions shall be documented on RWR Traveler . . . as specified in Procedure 4.3.16 and shall conform to the latest S&L wiring diagrams/drawings, or CECO OAD direction." LKC Procedure 4.3.16, RWR, states in part, "L. K. Comstock and Company . . . shall be responsible for completing all revisions noted on the latest S&L drawings . . . if S&L revisions require work, the LKC

Engineering Department shall generate a RWR Traveler indicating the equipment number, the equipment location, a description of the work performed, the RWR number, the drawing number, the revision, and if the equipment being reworked is safety-related. . . "

L. K. Comstock Engineering stated that presently, when S&L drawing revisions are received at Braidwood showing internal wiring changes an RWR is promptly generated to conform to the latest S&L wiring diagrams. LKC Engineering stated, however, that procedures which existed at the time Drawing 20E-1-4687H was revised on July 14, 1983 did not require an RWR to be promptly written. However, the inspector ascertained that Revision C of Procedure 4.3.16 dated March 30, 1981, did in fact require LKC to generate RWRs to the latest revision of S&L approved drawings. This failure of the licensee to assure that activities affecting quality be prescribed by procedures and that the activities be accomplished with instructions and procedures is a violation of 10 CFR 50, Appendix B, Criterion V (456/86015-02).

c. The following was noted during the field inspection:

- (1) The conductor terminated to Point 1 of the upper (open) limit switch mounted on valve 1RE9170 was loose and the limit switch contact designations did not correspond to the designations of the termination points at junction box 1JB286A. The inspector reviewed applicable wiring diagram 20E-1-4439, Revision E, and schematic diagram 20E-1-4030RE03 and noted that limit switch terminal designations were not shown on the drawings.
- (2) The insulation of the red-black conductor which is terminated at Terminal 11C of Valve ICC9413A is swollen at the terminal point.
- (3) The inspectors observed an unidentified limit switch housing and bracket to be laying against the 1/4" copper tubing used for air supply to actuate safety-related valve 1CS010A. The inspector noted that the copper tubing was bent and cracked.
- (4) The inspectors observed a cover missing from a nonsafety baily positioner for air operated valve 1AOV-1BR386. This positioner contains electronic components.
- (5) Cable pan 1619F contained large pieces of wood, scrap metal, nails metal rods, dirt, and insulation dust. Subsequently, the licensee took corrective action and cleaned the cable pan.

Items c(1) through (4) are considered open pending licensee response and NRC review (456/86015-03).

5. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 4.c.

6. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection. The inspectors summarized the scope and findings of the inspection noted in this report. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as proprietary.