

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

REGION III

Report No. 50-461/81-20

Docket No. 50-461

License No. CPPR-137

Licensee: Illinois Power Company
500 South 27th Street
Decatur, IL 62525

Facility Name: Clinton Power Station, Unit 1

Inspection At: Clinton Power Station, Clinton, IL

Inspection Conducted: August 11-14, 1981

Inspectors: *R. N. Gardner*
R. N. Gardner

9/15/81

F. C. Hawkins for
R. S. Love

9/15/81

Approved By: *F. C. Hawkins*, Acting Chief
Plant Systems Section

9/15/81

Inspection Summary

Inspection on August 11-14, 1981 (Report No. 50-461/81-20)

Areas Inspected: Licensee actions on previously identified inspection findings, observation of electrical raceway and cable installation activities, review of electrical contractors' QA implementing procedures, and review of electrical inspection reports. This inspection involved a total of 50 inspector-hours onsite by two NRC inspectors.

Results: Of the areas inspected, one apparent item of noncompliance (Criterion V - examples of failure to establish appropriate or adequate procedures - Paragraphs 2.a, 2.b and 2.c) was identified.

DETAILS

Persons Contacted

Illinois Power Company

- *W. C. Gerstner, Executive Vice President
- *L. J. Koch, Vice President
- *J. O. McHood, Vice President and Project Manager
- *R. J. Canfield, Director of Construction
- *A. J. Budnick, Director of Quality Assurance
- *M. E. D'Haem, Supervisor of Plant Operations
- *D. G. Tucker, Compliance Supervisor - Operations
- *J. S. Spencer, Director of Design Engineering
- *H. C. Hollon, Supervisor of Construction Quality Assurance
- *W. L. Calhoun, Supervisor of Electrical Construction
- *J. M. King, Assistant Director of Construction
- *B. Spicer, Quality Assurance Engineer
- *G. M. Brashear, Manager of Clinton Site
- *R. W. Morgenstern, Station Quality Assurance Engineer

Baldwin Associates

- *T. Selva, Manager of Quality and Technical Services
- *F. Chapman, Manager of Technical Services
- *R. F. Johnson, Quality Control Supervisor, Electrical
- *J.W. Smart, Manager of Quality Assurance
- *W. J. Harrington, Project Manager
- *H. J. Harris, Senior Electrical Quality Control Engineer
- *J. C. Wilson, Assistant Quality Control Manager
- *L. A. Gelbert, Manager of Quality Control
- *J. E. Findley, Resident Engineer
- *H. R. Swift, Project Engineer
- *R. Funk, Assistant Project Engineer
- *W. L. Atkins, Assistant Project Engineer
- *L. O. Fischbeck, Assistant Senior Electrical Engineer
- *B. A. Curby, Project Superintendent
- *F. Peterson, Senior Electrical Superintendent

U.S. Nuclear Regulatory Commission, Region III

- *H. H. Livermore, Senior Resident Inspector

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

*Denotes those present at the exit interview.

Licensee Action on Previous Inspection Findings

1. (Closed) Unresolved Item (461/80-24-01): During a previous inspection it could not be determined if a violation of safety related separation criteria existed where a Class 1E conduit and a non-Class 1E conduit entered pull box number 1PB09K. The inspectors verified that a divider had been installed in the pull box to separate the Class 1E cables from the non-Class 1E cables. This item is closed.
2. (Closed) Unresolved Item (461/81-01-01): During a previous inspection it was observed that attachments to Field Change Requests (FCR) were installed on a rack of working drawings located in the Control Building. The inspectors reviewed working drawings in the racks located outside the Control Room in the Control Building. No attachments to FCRs were observed in the "racks" of working drawings reviewed. This item is closed.
3. (Open) Noncompliance (461/81-05-09): During a previous inspection it was observed that the licensee's contractor failed to take prompt and effective corrective action to preclude repetition in response to audit findings and corrective action requests. The licensee has established a monthly "Quality Review Meeting" to communicate the quality activities of each of the organizations involved in Clinton Power Station construction.

Items discussed at these meetings include: status of open items such as audit findings, infractions, violations, 50.55(e) reports, etc. and to identify any adverse trends which appear to be developing and to establish corrective action to reverse such trends. This item will remain open until the effectiveness of these meetings can be verified during a subsequent inspection.

4. (Closed) Unresolved Item (461/81-05-10): During a previous inspection the inspector expressed concern with: (1) compatibility of Canon plugs with Amphenol receptacles; (2) sharp edges in cable routing; (3) cable separation and segregation requirements; (4) minimum bend radius requirements. These items of concern were subsequently addressed in Report No. 50-461/81-09. This item is closed.
5. (Open) (Noncompliance (461/81-05-16): During a previous inspection it was observed that the current drawings were not available in the field "stick files." It was observed that the licensee's contractor (Baldwin Associates) has assigned Ms. Patti Hargitt the responsibility of auditing the drawing control system. The audit schedule and one audit report were reviewed during this inspection. This item will remain open until the effectiveness of the audit program can be verified during a subsequent inspection.
6. (Closed) Unresolved Item (461/81-05-20): During a previous inspection it was observed that the Documentation Checklist (Form JV-146) for receiving Conax electrical penetrations erroneously contained the requirements for: (1) Weld Material Certification; (2) Impact Test

Report; and (3) NDE Test Certification. The subject checklist has been revised to exclude, as necessary, the above listed documents. This item is closed.

7. (Open) Noncompliance Item (461/81-09-01): During a previous inspection it was observed that a non-divisional cable enclosed in flexible conduit was routed with divisional cables where it entered Termination Cabinet H13-P709. This item will remain open until Section 8.3 of the FSAR is revised to allow the use of flexible conduit as a fire barrier.
8. (Open) Noncompliance (461/81-09-02): During a previous inspection it was observed that a smoke and fire detector cable enclosed in flexible conduit was routed from Division 2 floor duct into a Division 4 floor duct and finally into a non-divisional floor duct. This item will remain open until Section 8.3 of the FSAR is revised to allow the use of flexible conduit as a fire barrier.
9. (Closed) Noncompliance (461/81-09-03): During a previous inspection it was observed that sharp edges in PGCC floor ducts had caused two electrical cables to be damaged. Nonconformance Report (NCR) 4372 was prepared to document the damaged cables and NCR 4373 was prepared to document the sharp edges in PGCC floor ducts. NCR 4373 was superseded by NCR 4776. NCRs 4372 and 4776 were closed. The inspectors verified the above activities. This item is closed.
10. (Closed) Unresolved Item (461/81-09-04): During a previous inspection it was observed that there were holes in the floor duct barriers which did not appear to provide adequate isolation between parallel floor ducts of different divisions. General Electric issued Field Deviation Disposition Request LH1-651-81 to provide for the installation of plugs into the subject holes. This item is closed.
11. (Closed) Unresolved Item (461/81-09-05): During a previous inspection it was observed that the RTV being used as a moisture barrier and air seal in the PGCC floor ducts only had a six month shelf life without refrigeration. General Electric letter FSI-709-81 indicates that the normal shelf life of the RTV (GE Part Number A15F20A1) being used at the Clinton Power Station is twelve to eighteen months at room temperature. The letter further states that the product is to be considered good if it will flow in a smooth bead (no lumps) and will cure within 24 hours. This item is closed.
12. (Closed) Unresolved Item (461/81-09-06): During a previous inspection it was observed that a Canon plug was mated to an Amphenol receptacle. The inspector questioned the licensee concerning the engineering evaluation performed to ensure that the mating of cable plugs and receptacles from various manufacturers would not result in deleterious effects due to material incompatibility. General Electric Company letter IP-1745 states in part, "...the General Electric PGCC cable design utilized connectors that are procured using purchase specifications which include the requirements of Mil Spec Mil-C-5015. As such, the connectors procured, even if from

different vendors, must meet identical requirements, including interchangeability and interchangeability. Thus, the intermixing of standard connectors obtained from different vendors is considered technically acceptable." This item is closed.

Functional or Program Areas Inspected

1. Observation of Electrical Work Activities

a. The Region III inspectors observed the six Class 1E electrical cables that have been installed to date. The routing of each cable was compared with the routing requirements of their respective pull card. The inspectors observed the following:

- (1) 125 volt D.C. cable 1DC01A was routed correctly from Battery (1DC01E) to D.C. Distribution Panel 1A (1DC13E).
- (2) 125 volt D.C. cable 1DC01B was routed correctly from Battery 1A (1DC01E) to D.C. Distribution Panel 1A (1DC13E).
- (3) 125 volt D.C. cable 1DC03A was routed correctly from Battery 1B (1DC02E) to D.C. Distribution Panel 1B (1DC14E).
- (4) 125 volt D.C. cable 1DC03B was routed correctly from Battery 1B (1DC02E) to D.C. Distribution Panel 1B (1DC14E).
- (5) 125 volt D.C. cable 1DC03H was routed correctly. This cable "ties" the two cell groups together to form Battery 1B (1DC02E).
- (6) 300 volt signal cable 1DC03G was routed correctly from D.C. Distribution Panel 1B (1DC14E) to Termination Cabinet 1H13-P732.

The inspectors observed that the raceway internals were free of hazardous debris and sharp edges, conduit bushings were installed as required, and cables were properly identified.

No items of noncompliance were identified in this area.

b. The Region III inspectors observed that the termination of field run cables and jumpers associated with the Class 1E batteries are to be made using tinned copper lugs and zinc or cadmium plated hardware. In view of the fact that these items will be exposed to an acidic environment over the 40 year life of the plant, it is requested that an engineering evaluation be made to determine the possible need for using special hardware and lugs (e.g., lead clad) or for providing a protective coating for the lugs and hardware. This evaluation should include the battery rack hardware and welds.

This item is unresolved pending a review of the engineering evaluation.
(461/81-20-01)

- c. The Region III inspectors observed that Class 1E raceway (trays) in the Auxiliary Building, 781' elevation, are not separate by one foot as required by the Clinton PSAR, Paragraph 8.3.1.4.3.4. The actual separations observed were approximately nine inches.

Paragraph 8.3.1.4.3.4 of the PSAR states in part, "The minimum vertical distance between stacked trays of the same division...shall be one foot from the bottom of the upper tray to the top rail of the lower tray."

Paragraph 8.3.1.4.3.4 of the FSAR states in part, "The minimum vertical distance between stacked trays of the same division...shall be one foot from the bottom of the upper tray to the top rail of the bottom tray, except in certain areas where interferences occur, in which case the vertical separation becomes less."

This item is unresolved pending NRR's review and approval of the Clinton FSAR. (461/81-20-02)

2. Review of Electrical Procedures and Records

During the review of inspection records for the Class 1E cable pulls discussed in Paragraph 1.a, the inspectors observed that Class 1E cables were pulled without the requirement that the raceway (and raceway supports) through which the cables were routed be completely installed, inspected and accepted. In reviewing the procedures and instructions controlling the cable pulling activities, the inspectors observed the following:

- a. Paragraph 5.7.2 of BAP 3.3.2 (Cable Installation Procedure) requires that Quality Control (QC) personnel document pre-pull inspections on Form JV-353. An inspection attribute on Form JV-353 is "Raceway Route is Complete and Acceptable."

The Region III inspectors questioned the QC inspectors concerning the type and depth of inspections performed and the criteria involved in determining the acceptability of the raceway routes. The QC inspectors stated that lacking specific procedural guidance, they had performed modified final inspections. In reviewing the content of these inspections, the Region III inspectors observed that the status of welding and welding inspections were not included in the QC determination of acceptability.

Procedure BAP 3.3.2 does not specify the criteria upon which the acceptability of incomplete raceway/raceway supports will be based.

- b. Paragraph 5.7.2 of BAP 3.3.2 further requires that any problems or discrepancies identified during pre-pull inspections be resolved before the cable is pulled. The Region III inspectors observed that there is no appropriate acceptance criteria pertaining to the resolution of items identified during these inspections, e.g., missing raceway supports, incomplete tray to support welds, uninspected welds, etc.

This failure, as noted in Paragraphs 2.a and 2.b above, to include appropriate quantitative or qualitative acceptance criteria in procedures and instructions for determining that important activities have been satisfactorily accomplished is considered an item of non-compliance with 10 CFR 50, Appendix B, Criterion V as described in Appendix A of the report transmittal letter. (461/81-20-03)

- c. No procedural controls have been established to provide adequate assurance that cables previously pulled into incomplete raceways will not be damaged when work is resumed on the raceway or raceway supports. For example, when welding the cable tray to the tray support (hanger), there are no controls which would inform the welder that one or more electrical cables have been installed in the tray he is about to weld. The Clinton Power Station utilizes solid bottom tray, thus it would not be readily apparent to the welder that cable had been installed in the tray.

This failure to prescribe activities affecting quality by appropriate documented procedures is a further example of noncompliance as cited in Paragraphs 2.a and 2.b. (461/81-20-03)

- d. The Region III inspectors observed that in some cases, a Level II or Level III inspector was not evaluating the validity and acceptability of inspection results, as required by Regulatory Guide 1.58 (ANSI N45.2.6), of inspections performed by a Level I inspector. The licensee's contractor, Baldwin Associates, issued QCI number 102 (The Conduct of Inspections), Revision 0, which was "approved for construction" on August 14, 1981. Paragraph 3.2 of QCI 102 states in part, "Senior Quality Control Engineers shall review, interpret and accept/approve inspection reports of inspections made for their assigned areas." During this inspection, it was not determined if the Technical Services group had a similar procedure. Pending a review of Technical Services procedures and the implementation of QCI 102, this item is unresolved. (461/81-20-04)

Unresolved Matters

Unresolved matters are items about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 1.b, 1.c and 2.b.

Exit Interview

The inspectors met with licensee representatives (denoted under Persons Contacted) at the conclusion of the inspection on August 14, 1981. The inspectors summarized the scope and findings of the inspection. The licensee acknowledged the information.