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ILLINOIS POWER COMPANY



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CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

July 9, 1985

Docket No. 50-461

Mr. James G. Keppler
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Potential 10CFR50.55(e) Deficiency 55-84-02
Material Traceability

Dear Mr. Keppler:

On January 11, 1984, Illinois Power Company notified Mr. R. C. Knop, NRC Region III (Ref: IP memorandum Y-18980, dated January 11, 1984) of a potentially reportable deficiency per 10CFR50.55(e) concerning material traceability at the Clinton Power Station (CPS). This initial notification was followed by five (5) interim reports (Ref: IP letter U-10124, D. P. Hall to J. G. Keppler dated February 14, 1984; IP letter U-10157, D. P. Hall to J. G. Keppler dated July 12, 1984; IP letter U-10207, D. P. Hall to J. G. Keppler dated October 18, 1984; IP letter U-10240, D. P. Hall to J. G. Keppler dated January 18, 1985; and IP letter U-10259, D. P. Hall to J. G. Keppler dated March 22, 1985). Illinois Power's investigation of this issue is complete and has determined that the issue does not represent a reportable deficiency under the provisions of 10CFR50.55(e). This letter is submitted as a final report regarding this potentially reportable deficiency. Attachment A provides the details of our investigation.

We trust that this final report provides you sufficient background information to perform a general assessment of this potentially reportable deficiency and adequately describes our overall approach to resolve this issue.

Sincerely yours,

D. P. Hall
Vice President

RLC/lr (SW)

Attachment

cc: NRC Resident Office
Director, Office of I&E, US NRC, Washington, DC 20555
Illinois Department of Nuclear Safety
INPO Records Center

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ATTACHMENT A

Illinois Power Company
Clinton Power Station

Docket No. 50-461

Potential 10CFR50.55(e) Deficiency 55-84-02
Material Traceability

Final Report

Statement of Potentially Reportable Deficiency

A condition potentially adverse to quality was identified in the area of material traceability. This concern was based on a number of Deviation Reports (DRs), Nonconformance Reports (NCRs), and Quality Assurance audit findings that documented problems related to the identification and traceability of primarily electrical hanger materials installed at CPS. An investigation and evaluation of this issue has been performed to determine the extent of this problem, root causes, effect on installed hardware, and significance on the safety of operation of CPS.

Investigation Results/Background

On December 20, 1983, Illinois Power Quality Assurance issued Management Corrective Action Request (MCAR) Number 07 to identify an adverse condition existing in the area of material traceability. The basis for issuance of MCAR 07 included:

1. A significant number of Deviation Reports (DRs) and Nonconformance Reports (NCRs) concerning traceability of primarily electrical hanger support materials.
2. A delay in providing resolution to Corrective Action Request (CAR) Number 073 (dated November 2, 1981) which identified traceability problems.
3. An Illinois Power Quality Assurance audit disclosed problems regarding adherence to procedures related to material identification and traceability.

ATTACHMENT A
(continued)

An investigation plan was prepared and implemented by Illinois Power Company to investigate and address the concerns identified in the area of material identification and traceability. The plan included the following actions:

1. A review of historical data leading up to issuance of MCAR 07 was performed to identify the scope of past material traceability problems.
2. A review of design requirements, specifications, procurement procedures, and construction procedures was performed to evaluate adequacy of the CPS material identification/traceability requirements and their implementation.
3. A list of specific hardware installations affected by the material traceability problem was compiled and categorized.
4. Data collected in steps 1, 2, and 3 above has been analyzed to determine the scope, root causes, and the significance of the issue.
5. Corrective action for identified hardware/documentation deficiencies and their root causes has been determined and implemented.

The investigation has identified several areas where the requirements for material traceability were unclear or in question. These areas include:

1. Structural shapes and plates used in electrical supports
2. Electrical strut and strut fittings
3. Concrete expansion anchor bolts
4. ASTM A-307 bolts
5. Washer and shim stock material
6. ASME Section III, Subsection NF, Class 2 and 3 support materials
7. Cable finger assemblies

ATTACHMENT A
(continued)

Corrective Action

Baldwin Associates' Procedure (BAP) 1.5 and appropriate subtier documents have been revised to provide clarification of the traceability requirements and preclude recurrence of the material traceability problems. Changes in the procedures include the requirement that permanent plant materials, upon receipt, will be identified by hard marking or tagging. Discipline superintendents are required to notify QC prior to subdividing materials to ensure that traceability is maintained through installation.

Training on the enhanced procedural controls was given to all appropriate personnel, concurrent with the revision of applicable BA procedures.

Additional corrective actions taken include the following:

1. In order to preclude control problems, certain materials (structural shapes, plates, struts, strut fittings, bolts, etc.) are purchased as safety-related only (Ref. BAP 2.3).
2. Laydown yards have been reorganized to clearly segregate materials.
3. Sampling and testing programs were developed and implemented to provide assurance that the installations made prior to the implementation of the revised BA procedures have utilized materials capable of meeting design requirements.
4. A site purge of all non-traceable structural shapes, plates, and unmarked bolting material has been performed.

As previously stated, the investigation has identified several areas where the requirements for material traceability were unclear or in question. The following is a description of the corrective action taken to resolve each of these areas.

Structural Shapes and Plates Used in Electrical Supports

Certain structural shapes and plate materials utilized in the fabrication of electrical supports were identified as having incorrect or missing heat or Receipt Inspection Report (RIR) numbers which are necessary for QC verification.

The revision of the appropriate procedures to require material verification resolved this concern for future installations. In order to provide assurance that the installations made prior to the implementation of the revised procedures have utilized materials capable of meeting design requirements, a sampling program was developed and implemented utilizing MIL-STD-414 (Level V). Testing was performed on a representative population of electrical supports with traceability problems identified on DRs and NCRs. This program established that the materials met the requirements of Sargent & Lundy (S&L) Specification, K-2999 (Ref. NCR 23422). This testing also closed CAR Number 073.

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Electrical Strut and Strut Fittings

Nonconformance Reports 10214, 10216, and 10217 indicated that Certificates of Compliance had not been validated (an evaluation of the vendors' QA program had not been performed) for the B-line, Superstrut, and Unistrut materials used in the fabrication of electrical and instrumentation supports.

The concerns related to B-Line and Unistrut were resolved through BAQA Survey Audits, however those related to Superstrut remained. Sampling programs conducted by the electrical discipline using MIL-STD-414 (Level V) demonstrated that Superstrut materials met the requirements of S&L Specification, K-2999 (Ref. NCR 12597 & 12598). Prior to these sampling programs, any Superstrut material used in the fabrication of an instrumentation support was replaced with Unistrut. Currently, all procurements of strut materials are made safety-related. This, in conjunction with the sampling programs, allows all strut materials on site to be considered safety-related; and as such, are exempt from heat and /or RIR number traceability.

Also investigated were field fabricated brackets, similar to Powerstrut Part #AB-213/214-W. The material identity of the triangular-shaped gusset plates utilized to fabricate these brackets was in question. Of the 150 brackets, field fabricated, 22 were located. The material was correctly identified (RIR No.) on all 22 of these brackets. This quantity/acceptance satisfies MIL-STD-105D (Level II) (Ref. Letter Y-18015, dated August 30, 1984).

Concrete Expansion Anchor Bolts

Sargent & Lundy Specification K-2944 (Form CPS-1-CEA) states in part, "For safety related work, Certification of Compliance with this Specification for expansion anchor material shall accompany each delivery of these anchors...". Baldwin Associates has purchased most Hilti concrete expansion anchors as non-safety, but with Certificates of Compliance, without qualifying the Hilti QA Program.

Baldwin Associates Quality Engineering has qualified Hilti as a safety-related supplier utilizing documentation obtained through the Coordinating Agency for Supplier Evaluation (CASE) and other sources. Past purchase orders for Hilti bolts have been evaluated. The results of this evaluation determined that the materials and certifications met the requirements of S&L Specification K-2944 (Ref. Letter Y-18116, dated January 29, 1985).

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ASTM A-307 Bolts

Many installed bolts which were purchased as ASTM A-307, do not have a manufacturer's code mark (identification) on the head. The associated documentation does not provide assurance that the material meets, as a minimum, ASTM A-307 strength requirements.

A sampling program was developed and implemented in accordance with MIL-STD-414 (Level V) for testing of electrical and HVAC unmarked (lacking manufacturers' identification) A-307 bolts. The program established that the unmarked bolts met the strength requirements of A-307 (Ref. NCR 19789). The piping/instrumentation discipline has been reviewed for the use of unmarked bolts (Ref. Letter JWH-65-84, dated December 14, 1984). Although a small shipment of unmarked bolts was issued to the field, testing has shown that these bolts met the strength requirements of A-307 (Ref. NCR 21931 and CAR 187). The civil/structural discipline has been reviewed for the use of A-307 bolts. This review identified a limited number of safety-related installations requiring A-307 bolts. Since the testing performed on NCRs 19789 and 21931 demonstrated that the unmarked bolts met the requirements of A-307, no further corrective action was deemed necessary. (Ref. Letter CBR-06-85, dated January 16, 1985).

Quality Control lesson plan, QC-MC-023, provides training for QC personnel involved in receipt inspection to make certain that A/SA-307 bolting material is identified in accordance with the specification requirements (Ref. CAR 187).

Washer and Shim Stock Material

The documentation, identification, and traceability requirements for washer and shim stock material were unclear.

Sargent & Lundy has clarified the requirements for washer and shim stock with respect to documentation, identification, and traceability via their dispositions to Field Change Requests (FCRs) 20556, 20742, 20988, 21476, and 24423; and Engineering Change Notice (ECN) 4908. Baldwin Associates' procedures were revised to address these requirements as applicable. Shims utilized in bolted applications are acceptable (material type is not a concern in compressive loading), however those used in welded electrical support installations were investigated in order to determine material weldability. Chemical analysis, as a minimum, was performed on those shims found in the electrical hanger installations removed for testing per the electrical hanger test program (Ref. NCR 23422). This analysis demonstrated the material weldability (Ref. NCR 24659).

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ASME Section III, Subsection NF, Class 2 and 3 Support Materials

ASME Section III, Subsection NF, paragraph NF-2150 states in part, "Material shall be identified with the applicable material specification, grade, and class...". Baldwin Associates' Procedure, BAP 1.5, allowed materials for Class 2 and 3 component support installations to be identified with pink paint only.

An evaluation of the Code requirements for material identification was performed in order to address concerns on past installations. The evaluation concluded that the Code requirements were not met through this method of material identification. Corrective Action Request No. 222 was initiated in order to address and provide resolution to the concern of utilizing pink paint to identify materials for Class 2 and 3 component supports. As a result of CAR No. 222, NCR 27075 was initiated.

Nonconformance Report 27075 documents the review/evaluation of the ASME Class 2 and 3 (and Non-ASME, safety-related Class 0) carbon and stainless steel component supports. This review/evaluation indicates that the materials used to fabricate the supports met the design requirements. The NCR also noted that the pink paint used to identify Class 2 and 3 component supports exceeded the allowable levels of contaminants (halogens, chlorides, etc.) for use with stainless steel. As such, the disposition to NCR 27075 required that stainless steel materials, identified with pink paint, used in supports which may be subjected to temperatures exceeding 500°F would require the removal of the pink paint. Field Change Request 38327 clarified the disposition to NCR 27075 by stating, "Instrumentation supports associated with the PS (Process Sampling) and CM (Containment Monitoring) systems may see temperatures in excess of 500°F. All other instrument piping will be less than 500°F. Process piping temperatures are in accordance with the line list information." Using this criteria, BA Resident Engineering reviewed the S&L line list and compiled a list of all supports associated with stainless steel lines which may be subjected to temperatures of 500°F or higher. An inspection of these supports was performed and no evidence of pink paint was found. This action closed NCR 27075.

Baldwin Associates Procedure, BAP 1.5, has been revised to meet the material identification requirements of the Code.

The corrective action associated with the CAR (the marking of materials to meet the requirements of BAP 1.5) is expected to be completed by August 12, 1985.

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Cable Finger Assemblies

The purpose of the finger assemblies is to provide support to vertical cable runs. Most of the assemblies were purchased safety-related from an approved vendor; however, traceability of each assembly to the appropriate RIR number cannot be determined, because the number is hidden by the installation. The remaining assemblies were field fabricated or modified using materials for which the traceability has been questioned.

Finger assemblies for which the material traceability has been identified as indeterminate and documented via an NCR were tested in conjunction with the electrical support materials. This testing has demonstrated the materials met the requirements of S&L specifications K2949/2999 (Ref. Letter Y-26007, dated December 18, 1984).

Summary

In summary, the problems associated with traceability were, in part, due to the lack of clarity and consistency in procedural requirements resulting in a lack of adherence to those procedures. Therefore, several Baldwin Associates' Procedures (BAPs) (most notably BAP 1.5) have been revised to prevent recurrence. In addition, the associated Job Instructions (JIs), and Quality Control Instructions (QCIs) have subsequently been incorporated into the applicable BAPs in order to establish a single document which reflects the requirements for both construction and inspection activities. The changes to the BAPs included marking or tagging permanent plant materials upon receipt and requiring the crafts to notify QC prior to subdividing materials in order to maintain traceability through installation. Steps have been taken to reorganize the laydown yards to clearly segregate materials and a purging of the site has been performed to remove any non-traceable structural shapes, plates, and unmarked bolting material. In addition, most materials (structural shapes, plates, strut, strut fittings, bolts, etc.) are purchased only safety-related. This deletes the need for traceability after receipt inspection of particular items.

Safety Implications/Significance

The investigation of this potentially reportable issue is complete. Illinois Power Company has reviewed and evaluated the findings of this investigation and has determined that no significant conditions adverse to the safety of operations of CPS were found. Therefore, this issue is considered to be not reportable under the provisions of 10CFR50.55(e).

RLC/lr (SW)