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ILLINOIS POWER COMPANY

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

September 19, 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 55-84-18:
ASTM A-36 Plate Material

Dear Mr. Keppler:

On August 3, 1984, Illinois Power Company notified Mr. Jablonski, NRC Region III, (Ref: IP memorandum Y-20732, dated August 3, 1984) of a potentially reportable deficiency concerning A-36 plate material. This initial notification was followed by three (3) interim reports (ref: IP letter U-10198, D. P. Hall to J. G. Keppler dated August 30, 1984; IP letter U-10228, D. P. Hall to J. G. Keppler dated December 7, 1984; and IP letter U-10262, D. P. Hall to J. G. Keppler dated April 1, 1985). Our investigation of this issue is complete. Illinois Power has reviewed and evaluated the findings associated with this investigation and has determined that the issue does not represent a reportable deficiency under the provisions of 10CFR50.55(e). 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 the issue.

Sincerely yours,

D. P. Hall
Vice President

RLC/kaf

Attachment

cc: NRC Resident Office, V-690
Director - Office of I&E, US NRC, Washington, DC 20555
Illincis Department of Nuclear Safety
INPO Records Center

Attachment A
Illinois Power Company
Clinton Power Station

Docket No. 50-461

Potential 10CFR50.55(e) Deficiency 55-84-18:
ASTM A-36 Plate Material

Final Report

Statement of Potentially Reportable Deficiency/Background

Illinois Power Quality Assurance (IPQA) identified certain 15"x15"x1/2" steel plates (Heat No. 8117721, Receipt Inspection Report (RIR) No. S-12949 supplied by Interstate Steel) whose quality was indeterminate. The condition of the material became suspect during mechanical cutting operations. Although the plates were procured safety-related (Certified Material Test Report (CMTR) required) to the requirements of ASTM A36, retesting has shown the physical properties (yield and tensile strength) are less than that required by the material specification. The CMTR from Phoenix Steel Corp. (Claymont, Delaware 19703) which accompanied the material showed that it met the requirements of A36. A total of 300 plates of this heat number were received for use in electrical cable tray and conduit support installations.

Preliminary Investigation

Preliminary tests performed on the suspect material indicated yield and tensile values of 30 and 45 KSI, respectively (Ref. Nonconformance Report (NCR) 22906, sheets 3 through 6). Subsequently, Sargent & Lundy (S&L) was requested to perform an evaluation of the cable tray and conduit support connection details which utilize 1/2" thick plates in order to determine whether the design can be maintained with the above reduced properties (Ref. Letter Y-18038, dated October 11, 1984).

The details for which the design could not be satisfied with the reduced properties were identified by S&L (Ref. Letter SLS-I-4862, dated December 10, 1984). These details were then reviewed by Baldwin Associates Resident Engineering (BARE). This review involved first, the use of the detail; and second, whether the suspect material was used to accomplish the installation. None of the suspect material was identified in these specific installations (Ref. Letter WJR-11-84, dated November 26, 1984).

In order to firmly establish the reduced yield and tensile values of 30 KSI and 45 KSI respectively, an additional 30 plates (HT. No. 8117721) were tested by St. Louis Testing Laboratories, Inc. The results of these tests indicated yield and tensile values as low as 26.5 KSI and 42.8 KSI respectively (Ref. NCR 22906, sheets 7 through 16). This required a re-evaluation of the aforementioned details. A complete description of this re-evaluation as well as the total evaluation performed as a result of this investigation is discussed later.

Plate materials were also tested (chemical & physical analysis) via the Electrical Hanger Material Sampling Program (Ref. NCR 23422). Of the plates tested by this program, one had results which were similar to that of the retest of the original suspect material (8117721). The heat (432L7521) and RIR (S-13458) numbers of the sample (Sample AM-QE55, STL #11) were, however, traceable to material manufactured by Bethlehem Steel. The materials tested which exhibited reduced properties were supplied by Interstate Steel Supply Co. (1800 East Byberry Rd, Philadelphia, PA 19116). Because of this correlation between the heat and the original heat number 8117721 identified, Interstate supplied plate materials were suspect regardless of the material manufacturer.

Investigation/Evaluation

A list of the plate materials purchased from Interstate has been compiled. This list consists of a total of 83 heats. Two (2) plates from each of the 76 heats available from construction stock were sent to St. Louis Testing Laboratories for chemical and physical analysis to determine whether any additional Interstate supplied plate materials exhibited reduced properties (Ref. NCR 22906, sheets 26 through 101 and 141 through 143). Eleven (11) heats of material did not meet the requirements of the material specification (Ref. NCR 34517 for the dispositioning of the material). The results of the 11 heats with the reduced properties were submitted to S&L for evaluation and determination of the material acceptability.

Sargent & Lundy's evaluation indicated that the material had large variations in the yield strength, but uniformity in the tensile strength. Based on this, S&L used the minimum yield and tensile strength values applicable to the various plate thicknesses to evaluate the cable tray and conduit support installations (Ref. Letter SLS-I-5033, dated March 25, 1985).

A review to identify (by support number) the specific cable tray and conduit supports which could not be qualified with the lower strength values was performed by S&L (Ref. Letter SLS-I-5141, dated May 30, 1985).

As a result of S&L's review, BARE was requested to review the specific cable tray and conduit support traveler packages to identify material either supplied by Interstate or identified as "shear cut" (no heat/RIR identification) (Ref. Letter Q-04216, dated June 6, 1985).

On June 24, 1985, the review by BARE was completed. The specific cable tray and conduit supports were identified and NCRs were initiated (Ref. Letter JLT-1816-85, dated June 24, 1985).

In addition to cable tray and conduit supports, the electrical equipment mounting details shown on S&L's E05-1200 series drawings which use plate materials were also reviewed by S&L. This review concluded that the details are not impacted by the reduced material properties (Ref. Letter SLS-I-5180, dated June 28, 1985).

Concurrent with S&L's review of cable tray and conduit supports, BA Quality Engineering (QE) and IPQA performed a review to establish that the electrical discipline was the sole user of Interstate supplied materials (except those ordered by the mechanical discipline). Baldwin Associates' QE found no evidence of the material being used by another discipline (Ref. Letter JLT-1563-85, dated April 22, 1985). Illinois Power's QA reviewed the BA subcontractor's documentation and found no evidence that Interstate materials were used by the subcontractor either as a transfer of material from BA or as a direct purchase (Ref. Letter Q-04311, dated August 5, 1985).

Summary of Corrective Action Required/Taken

Cable Tray Supports

1. The generic details utilizing the plate material were reviewed by S&L to determine if the generic capacities were affected.

2. A drawing survey was performed by S&L to identify specific supports which utilize the details that cannot be qualified for generic capacities. These supports were reviewed with the lower plate strength and actual support loading.

3. The list of supports, which could not be qualified with the actual loads, was sent to BARE to verify if the affected detail or the lower strength plate material had been used for these supports.

4. Baldwin Associates' RE has identified the supports noted above for which materials with lower strength or materials not identified (no heat/RIR) have been utilized and has generated NCRs. These NCRs are being dispositioned, as applicable, by S&L. The corrective action associated with these NRCs is expected to be completed by September 25, 1985.

5. The change documents associated with a sample of 100 randomly selected cable tray supports were reviewed by S&L and it was verified that the lower plate strength did not affect any of these supports.

Conduit Supports

1. A review of all the generic details was performed by S&L to verify if the generic capacities were affected by the lower strength of the plate materials. The list of generic details which could not be qualified was identified.

2. A drawing survey was performed by S&L which identified that there were only three specific conduit supports which utilized any of the above affected generic details.

3. Sargent & Lundy reviewed these three hangers and found them to be adequate.

4. The change documents associated with a sample of 80 randomly selected conduit supports were reviewed by S&L and it was verified that the lower plate strength did not affect any of these supports.

Electrical Equipment Mounting Details (E05-1200 Series Drawings)

1. A review of the generic and unique details was performed by S&L to verify if the lower strength of plate material was adequate. This review has concluded that all plate details are adequate for the reduced material properties.

Future electrical support designs and change documents to the existing designs will utilize the lower strength properties as calculated and provided by S&L (Ref. Letter SLS-I-5200, dated July 16, 1985).

Root Cause

An analysis to determine the root cause of this deficiency was performed. The deficiency is attributed to the lack of material control by the vendor. This deficiency is also part of NRC IE Information Notice No. 85-15 (dated February 22, 1985).

Safety Implication/Significance

Illinois Power's investigation of this matter is complete. The safety implication and significance was evaluated by S&L (Ref. Letter SLS-I-5180, dated June 28, 1985). Sargent & Lundy's evaluation concluded that the suspect plate materials, with reduced material properties, are adequate for cable tray supports, conduit supports and electrical equipment mounting details (E05-1200 Series Drawings); and therefore do not represent a condition adverse to the safety of operations of CPS. Illinois Power has reviewed and evaluated the deficiencies associated with this investigation and has concluded that this issue does not represent a reportable condition under the provisions of 10CFR50.55(e).