

ILLINOIS POWER COMPANY

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

U-10218

November 7, 1984

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 55-84-03
Installation of Concrete Expansion Anchors

Dear Mr. Keppler:

On January 11, 1984, Illinois Power Company notified Mr. R. C. Knop, NRC Region III (ref: IP memorandum Y-18981 dated January 11, 1984) of a potentially reportable deficiency per 10CFR50.55(e) concerning the improper installation of concrete expansion anchor bolts at Clinton Power Station (CPS). This initial notification was followed by three (3) interim reports (ref: IP letter U-10123, D. P. Hall to J. G. Keppler dated February 14, 1984; IP letter U-10151, D. P. Hall to J. G. Keppler dated May 4, 1984; and IP letter U-10200, D. P. Hall to J. G. Keppler dated August 27, 1984). Illinois Power's investigation of the above matter 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/gs (NRC2)

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 55-84-03
Installation of Concrete Expansion Anchors

Final Report

Statement of Potentially Reportable Deficiency (withdrawn)

Irregularities were identified in the methods of installing concrete expansion anchors (CEAs) at CPS. These irregularities include welded anchors, embedment depth, and foreign material in the anchor bolt holes. An evaluation of this issue was performed to determine the extent of these problems, and their significance on the safety of operations at CPS.

Investigation Results/Background

During an Institute of Nuclear Power Operations (INPO) evaluation of CPS construction activities in late November 1983, irregularities were identified in the installations of CEAs by the contractor, Baldwin Associates (BA). As a result of these irregularities, Illinois Power directed BA to cease the installation of CEAs until appropriate corrective action was established and implemented. In early December, 1983, a concern was received by IP that a CEA installation performed by a particular craftsman on a pipe hanger assembly was improper. Investigation of the installation found that three of four anchors were improperly installed. Further investigation of the forty-eight (48) CEA installations performed by the craftsman identified additional examples of improper installation. Sixteen (16) Nonconformance Reports (NCRs) were written to document and obtain resolution of the identified hardware irregularities.

A reinspection plan was established and implemented at CPS to further investigate the extent of the problem. This plan initially included a reinspection of a sample of completed safety related, seismic pipe support CEAs installed by BA prior to the departmental hold, to provide at least a 95% confidence level that less than 5% defects exist in the installations. The reinspection sample population was randomly chosen and population size was based on Military Standard 105.D.

A method of reinspecting CEAs that does not require anchor plate removal was developed, qualified, and approved in April, 1984. The reinspection program was designed to verify:

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1. Anchor length
2. Anchor not welded to plate
3. Anchor not bent
4. Anchor not loose in the concrete
5. Anchor embedment
6. Anchor angularity
7. Bearing of anchor nut
8. Anchor spacing (external and internal)

One randomly selected anchor per assembly in the sample population was reinspected. If the selected anchor did not meet any of the required inspection attributes, then the remaining anchors were reinspected to support an engineering evaluation of the overall assembly. The sampling program for the Concrete Expansion Anchors (CEA) at CPS has been completed. A random inspection of 290 piping supports was completed with no findings that would constitute a significant safety defect. Sargent & Lundy's (S&L) letter SLI-12993 dated August 6, 1984, states "all the nonconforming conditions identified have no safety significance regarding the ability of the piping systems to perform their safe shutdown function."

During the development of the sample population, six (6) hangers had been reported by construction personnel as not being installed. An independent verification by Baldwin Associates Quality Control (BAQC) personnel indicated that these hangers had been installed. Illinois Power Quality Assurance (IPQA) requested that these six (6) hangers be inspected in addition to the requirements of the original sample population. Of the six (6) hangers inspected, one (1) had an unacceptable gap and the sampled bolt would not achieve full installation torque after testing. These deficiencies were documented on NCR No. 22665.

Our investigation proceeded to inspect CEAs used by other disciplines: Heating, Ventilation, and Air Conditioning (HVAC); Electrical; and Civil/Structural. A random sample of 58 assemblies per discipline was chosen. A total of 49 NCRs were written to document identified deficiencies on safety-related installations. These NCRs were dispositioned in accordance with approved site procedures. One (1) NCR (No. 17156) will be handled as part of the investigation of CEAs installed in finishing slabs, Issue 55-84-12.

The investigation has inspected CEAs used on Balance of Plant (non-safety) installations. Ten (10) supports in each building were inspected. This was a random selection to include all disciplines. The supports were located on floors, walls, and in the overhead. A total of eighty (80) CEAs were tested with seven (7) concerns being identified. The results of the inspection were forwarded to BA Resident Engineering (BARE) for evaluation. In their response, BARE indicated that of the seven (7) concerns identified, three (3) of the conditions were

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documented on NCRs to obtain S&L evaluation (NCRs 22002, 22003 and 22004). The dispositions of NCRs 22003 and 22004 were "use-as-is". NCR 22002 was written to document a bolt spacing violation on CEAs installed in the Screen House. These CEAs were utilized to secure a presumed non-safety related platform to the wall of the Screen House. Further investigation has determined that the platform was actually safety-related. The matter concerning the Screen House Platform is being investigated and evaluated under 10CFR50.55(e) issue 55-84-22.

Corrective Action

The following corrective actions have been taken to correct the identified causes of this issue and to prevent recurrence of inadequate CEA installations:

1. Baldwin Associates' Procedure BAP 2.16 and Quality Control Instruction QCI-105 were revised to incorporate several in-process QC inspections and QC hold points.
2. BA craftsmen and QC personnel involved in CEA installation have received documented training in the requirements of the anchor bolt installation specification and applicable procedures.
3. BA craftsmen are now being qualified prior to being allowed to install CEAs. Qualification is based upon receiving training to the requirements of CEA specification and procedures.
4. A departmental hold on CEA installation by BA was placed in effect at CPS on November 29, 1983. The hold was lifted on January 6, 1984, after the initiation of the corrective actions identified above.
5. A reinspection of all CEAs known to be installed by the suspect craftsman was performed, and irregularities noted by the reinspection were documented on Nonconformance Reports (NCRs). Resolution of these NCRs will assure that the nonconforming installations meet design requirements.
6. A reinspection plan was developed and implemented to determine the extent of CEA installation irregularities, and to re-establish confidence in past CEA work.

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7. Following formal training, craft personnel involved in CEA installations were issued a certification card.
8. All CEAs were placed under administrative controls. These controls preclude issuance of CEAs to craft personnel without certification cards. Only certified personnel will be allowed to install CEAs.

Safety Implications/Significance

Illinois Power requested Sargent and Lundy (S&L) to evaluate the safety significance of those NCRS requiring rework to CEA installations. Based on their evaluation, S&L has stated that the identified deficiencies would not have adversely affected the safety of operations of CPS, had the deficiencies gone uncorrected.

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