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ILLINOIS POWER COMPANY

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

August 27, 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 two (2) interim reports (ref: IP letter U-10123, D. P. Hall to J. G. Keppler dated February 14, 1984; and IP letter U-10151, D. P. Hall to J. G. Keppler dated May 4, 1984). Our investigation of this issue is continuing, and this letter represents an interim report in accordance with 10CFR50.55(e).

Statement of Potentially Reportable Deficiency

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 is being 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

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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:

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 anchor failed, the remaining anchors were reinspected to support an engineering evaluation of the overall assembly. Since our last report, 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."

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 bolts per discipline was chosen. To date, 48 NCRs have been written to document identified deficiencies. Of the 48 NCRs written,

fifteen (15) remain to be resolved in accordance with approved site procedures. S&L will be formally requested to evaluate the safety significance of the identified deficiencies.

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 for evaluation. A formal reply with the subsequent dispositions is pending. These bolts are on non-safety related installations and do not constitute a significant defect.

Corrective Action (Interim)

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 have been 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.

Safety Implications/Significance

Illinois Power Company's investigation of this potentially reportable deficiency is continuing. Approximately sixty (60) days will be necessary to complete our investigation, determine reportability and file a final report on the issue.

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

Sincerely yours,

D. P. Hall
Vice President

RLC/cah (NRC2)

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