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ILLINOIS POWER COMPANY

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U-10135

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

March 15, 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: 10CFR50.55(e) Deficiency 55-83-06
Structural Steel Welds by Rockwell Engineering

Dear Mr. Keppler:

On April 27, 1983, Illinois Power Company verbally notified Mr. F. Jablonski, U. S. NRC Region III, (ref: IP memorandum Y-17046, 1605-L, dated April 27, 1983) of a potentially reportable deficiency per 10CFR50.55(e) concerning vendor shop welding deficiencies on certain structural steel members supplied by Rockwell Engineering. This initial notification was followed by three (3) interim reports (Ref: IP letter U-10060, D. P. Hall to J. G. Keppler dated May 31, 1983; IP letter U-10085, D. P. Hall to J. G. Keppler dated August 31, 1983; and IP letter U-10110, D. P. Hall to J. G. Keppler dated December 9, 1983). As a result of our prior investigation, this issue was determined to represent a reportable deficiency under the provisions of 10CFR50.55(e). This letter represents an interim report in accordance with 10CFR50.55(e)(3).

Statement of Reportable Deficiency

Vendor shop welding deficiencies were identified on certain structural steel members supplied by Rockwell Engineering (structural steel fabricator) to Baldwin Associates (CPS contractor) for installation at Clinton Power Station (CPS). The structural steel members in question are columns used to provide lateral support for concrete block walls at CPS. Investigation of this issue continues in order to determine the full extent of this condition in other types of structural steel members supplied to CPS by this vendor.

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Background/Investigation Results

During on-site modifications to a block wall support column by Baldwin Associates, a deficient weld was found that was made by the structural steel fabricator. The deficient weld was one of three used to attach a connection angle to the column. The column was being modified per a Field Change Request (FCR 17033) which, in part, required removal of the connection angle. Inspection of the deficient weld revealed that there was no fusion with the base metal. An investigation was initiated to determine the scope of this problem.

A review of the applicable purchase order was performed and those columns received with unmodified welded connections were identified. This review identified fifty-eight (58) columns. An inspection by Baldwin Associates Technical Services was performed and fifty-seven (57) columns were found to contain welding deficiencies, varying from cosmetic to potentially structurally significant. Deviation Reports (DR) 5815 and 10303 were generated to document the welding deficiencies identified by the inspection.

To evaluate the root causes of potential welding deficiencies, and to eliminate cosmetic deficiencies identified during the inspection, the welds on twenty-two (22) erected columns were field ground to sound metal and then reinspected. This second inspection provided detailed information and sketches of the remaining welds for on-site evaluation. The thirty-five (35) columns that were not installed were returned for evaluation and were repaired in the vendor's shop. The evaluations indicated a trend in inadequate connection angle welds parallel to the column flanges on 6" and 8" columns. This trend was caused by lack of accessibility to properly position the electrode during welding of the connection angles. As a result of this adverse trend, the scope of the investigation was increased to address all safety-related blockwall columns to assure adequacy in meeting design requirements.

All installed safety related blockwall support columns fabricated by Rockwell Engineering which have the potential for welding deficiencies were identified. Those column connection angles that are accessible have been inspected and are being repaired as necessary. Those columns and connection angles that are not accessible (due to being encased in block walls or concrete walls/slabs) have been referred to the Architect Engineer for an engineering evaluation and disposition. This evaluation has been scheduled for completion by April 9, 1984.

In parallel to the above inspection effort, an inspection of a random sample of other accessible assemblies welded by the fabricator under other purchase orders was performed. The results of this inspection did not indicate any additional adverse trends. However, several isolated cases of deficient welding were identified. As a result, an additional sample

representing approximately 20% of the safety related structural steel members shop-welded by the fabricator was inspected to further investigate the extent of this condition. The inspection has been completed and the results referred to the Architect Engineer for an engineering evaluation, which is scheduled for completion by April 2, 1984. The results of the engineering evaluation will be reviewed to determine the need for additional inspections, and will indicate the significance of the conditions found.

Corrective Action (Interim)

1. In-process installation work on the subject blockwall columns was discontinued until further investigation of this potential deficiency was performed and the columns repaired.

2. Blockwall columns that were not installed were returned to the vendor for repair in accordance with approved welding procedures. Baldwin Associates Vendor Surveillance personnel witnessed a representative sample of column weld inspections and repairs.

3. Blockwall columns installed at CPS that are accessible have been inspected and are being repaired as necessary. Those which are not accessible for inspection and repair have been referred to the Architect Engineer for an engineering evaluation and disposition.

4. Welding deficiencies noted during the random inspection are being documented on Nonconformance Reports (NCRs) and the members are being repaired or reworked by Baldwin Associates.

5. Where possible, Illinois Power and Baldwin Associates have constrained future orders of structural steel to include only stock material. Fabrication of required members will generally be performed on-site by Baldwin Associates and stock material will be used. This action has resulted in minimum purchases of shop-fabricated structural steel assemblies.

6. Structural steel vendors performing work or supplying material for CPS (past and present) were notified that they will be held responsible for their work. This includes correctness of design, proper completion of work, implementation of QA/QC programs, and reportability in accordance with the Code of Federal Regulations.

7. Since the affected members were received, enhancements have been made to the Baldwin Associates vendor surveillance and receipt inspection programs. These enhancements include the following:

a. intensified in-shop vendor surveillances in both scope and number.

b. a reevaluation of Baldwin Associates vendor surveillance inspection/receipt inspection points was performed, with more hold/inspection points established.

c. to increase overall program effectiveness, a reorganization of the Baldwin Associates vendor surveillance group from the Quality Control to the Quality Assurance Department was made.

Safety Implications/Significance

The blockwall columns in question provide lateral support for concrete block walls at CPS. It can be postulated that the shop welding deficiencies on blockwall columns could adversely affect the performance of the block walls under seismic loading conditions and impact the safe operation of CPS. Although further inspection and engineering evaluations of the structural steel members supplied by the vendor are being performed, this issue is considered to be reportable pursuant to 10CFR50.55 (e).

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

Sincerely yours,

D. P. Hall
Vice President

RDW/lag

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