ILLINOIS POWER COMPANY

1605-L
U-10093
CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

September 26, 1983

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: Deficiency 82-10
10CFR50.55(e)
Safety Related Piping
Wall Thickness Deficiencies

Dear Mr. Keppler:

On October 7, 1982, Illinois Power verbally notified Mr. P. Pelke, NRC Region III of a potentially reportable deficiency per 10CFR50.55(e) concerning possible wall thickness deficiencies for some safety related piping. This initial notification was followed by three (3) interim reports (letter U-10009, D. P. Hall to J. G. Keppler dated November 12, 1982, letter U-10027, D. P. Hall to J. G. Keppler dated February 10, 1983, and letter U-10063, D. P. Hall to J. G. Keppler dated June 17, 1983).

Illinois Power's investigation of this issue is now complete and this letter is submitted as a final report in accordance with 10CFR50.55(e)(3) on this reportable deficiency.

STATEMENT OF REPORTABLE DEFICIENCY

Two (2) cases have been identified where piping with less than minimum allowable wall thickness was installed in ASME Class 2 piping systems:

a.) In the Residual Heat Removal (RHR) system, line number 1RH03BB12, pipe of 0.375 inch (nominal, standard) wall thickness was installed; design documents dictated the use of pipe of 0.843 inch (nominal, schedule 100) wall thickness.

b.) In the Low Pressure Core Spray (LP) system, line numbers 1LP21A4 and 1LP21B4, pipe of 0.237 inch (nominal, schedule 40) wall thickness was installed; design documents dictated the use of pipe of 0.337 inch (nominal, schedule 80) wall thickness.

This condition has been determined to be a significant deficiency in final design and construction and therefore is reportable under 10CFR50.55(e).

IE27 1/1

BACKGROUND/INVESTIGATION RESULTS

As part of the preservice inspection program, certain piping welds were being ultrasonically examined for thickness by Baldwin Associates (Illinois Power Contractor). These examinations revealed that the wall thickness of a weld in line number 1RH03BB12 was less than required by applicable piping installation documentation. Nonconformance Report (NCR) 7618 was written to document this problem. Evaluation of this NCR determined that the measured wall thickness (0.305 inch) at the weld was less than specified in the installation documents (0.375 inch). Also, the installation documents did not correspond to the design information supplied by Sargent & Lundy (CPS Architect/Engineer) which specified 0.843 inch. Further investigation showed that various design documents supplied by Sargent & Lundy to the Piping Fabricator (Southwest Fabricating and Welding) contained inconsistencies. Nonconformance Report 7833 was written to document this problem.

Investigation found that several errors led to this occurrence. When the pipe was detailed and fabricated, the Sargent & Lundy piping line list correctly specified schedule 100 (0.843 inch nominal wall thickness). However, the associated Sargent & Lundy piping and instrument diagram and the single line piping drawing for this pipe erroneously specified schedule 40 (0.406 inch nominal wall thickness). The fabrication isometric drawing and spool piece details drawing produced by Southwest Fabricating and Welding erroneously specified standard wall thickness for this line (0.375 inch nominal). As a result, the pipe was fabricated and installed as standard wall pipe, in accordance with the incorrect isometric and spool piece detail drawings.

In reviewing the design history of this pipeline, it was determined that the original design was properly performed and all design documents were consistent. However, in late 1978 and early 1979, a new loads adequacy evaluation determined that suppression pool swell loads required that pipe wall thicknesses for certain lines be increased. This required wall thickness increase was not properly transferred to all affected design documents.

Investigation of other piping affected by this external load indicated that one (1) additional system, line numbers 1LP21A4 and 1LP21B4, had wall thickness problems. In this case, the piping line list and P&ID specified schedule 80 (0.337 inch nominal wall thickness), but the piping drawing specified schedule 40 (0.237 inch nominal wall thickness), and the isometric drawing shows schedule 40. Schedule 40 pipe was subsequently installed. Nonconformance Report 8201 was written to document this problem.

Similar cases of this problem were identified with line numbers 1CC57C4 and 1CY28B6. In these cases, the fabricator's isometric drawings specified schedule 40 pipe, but the associated

design drawings specified schedule 80 for portions of the lines. Schedule 40 pipe was subsequently provided to Baldwin Associates for installation. These errors were discovered in early 1981, and were corrected prior to pipe installation .

CORRECTIVE ACTION

Illinois Power is taking the following steps to correct identified deficiencies and to prevent recurrence:

1. Lines 1LP21A4 and 1LP21B4 will be used as installed, but a penetration sleeve will be modified to shield the pipe from the external loads. This sleeve modification also will require a pipe support configuration change.

2. Line 1RH03BB12 will be used as installed, but the pipe supports will be modified to withstand the pool swell loads.

3. Sargent & Lundy has reviewed their design information for safety-related piping subject to external loading to ensure that the design documents are consistent and adequate. This review has identified no inconsistencies other than those noted in this report.

4. Sargent & Lundy is reviewing and statusing safety related, augmented D, and Fire Protection related process piping isometric drawings to ensure that the correct wall thickness has been specified for fabrication and installation. This review also includes a comparison of various S&L design documents for consistency. This review is substantially complete. Through September 6, 1983, 1086 drawings had been reviewed. No additional cases of wall thickness deficiencies have been identified.

5. To reduce the potential for errors in future work, Sargent & Lundy has improved their method of identifying piping wall thickness on the Piping Line List.

6. Sargent & Lundy is presently reviewing certain contractor's drawings that were previously used for installation and inspection without a Sargent & Lundy review. This review includes the following areas:

    1. Small bore piping isometric drawings.
    2. Instrumentation line isometric drawings.
    3. Penetration sleeve drawings.
    4. Penetration head fitting drawings.
    5. Thermowell installation drawings.

7. Illinois Power is conducting a program of technical reviews of S&L's large bore piping design of selected piping subsystems. Six (6) reviews have been conducted to date, with others planned in the future.

A recurrence of this problem is unlikely because large bore piping design and fabrication is essentially complete for Clinton.

SAFETY IMPLICATIONS/SIGNIFICANCE

The pipelines in question could be subjected to pool swell impact which produces additional external loads on them. Failure of the RHR piping could potentially result in less emergency core cooling flow to the reactor than required by design. Failure of the LP piping in question could result in degraded containment integrity. On this basis, if this deficiency had been undetected it could possibly have adversely impacted the safety of CPS operations and is considered reportable under 10CFR50.55(e).

We trust that this final letter provides sufficient information to perform an assessment of this deficiency, and adequately describes our analysis and resolution.

Sincerely yours,

D. P. Hall
Vice President

REC/lf

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