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ILLINOIS POWER COMPANY



1605-L
U-10136

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

April 4, 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 82-12
Binding of Sway Strut/Snubber
Piping Component Supports

Dear Mr. Keppler:

On October 21, 1982, Illinois Power notified Mr. H. Wescott, NRC Region III, (Ref: IP memorandum Y-13998, 1605-L, dated October 21, 1982) of a potentially reportable deficiency per 10CFR50.55(e) concerning the fabrication of sway strut type pipe supports. The location of welds on the eyelet of the sway strut interferes with the retaining bracket (clevis) such that the required motion of the sway strut may not be achieved. This initial notification was followed by five (5) interim reports (Ref: IP letter U-10011, D. P. Hall to J. G. Keppler dated November 20, 1982, 1605-L; IP letter U-10032, D. P. Hall to J. G. Keppler dated February 18, 1983, 1605-L; IP letter U-10058, D. P. Hall to J. G. Keppler dated May 31, 1983; IP letter U-10089, D. P. Hall to J. G. Keppler dated September 8, 1983; and IP letter U-10112, D. P. Hall to J. G. Keppler dated December 22, 1983). Our investigation into this matter has determined that this issue represents a reportable deficiency under the provisions of 10CFR50.55(e). This letter represents a final report in accordance with 10CFR50.55(e)(3).

Statement of Reportable Deficiency

The welded male rod extension piece used in sway strut and snubber piping supports supplied by Basic Engineers (BE) binds in the pipe clamp and rear bracket, limiting the designed range of motion. The binding could cause extra loads on the weld attaching the rear bracket (clevis) to the structure. This additional load could result in overstress of the weld, and potentially, failure of the weld.

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Background/Investigation Results

During inspection activities of piping support installation by Baldwin Associates (IP Contractor), a sway strut type pipe support was found where metal to metal contact existed between the male rod extension piece and the pipe clamp. This condition does not conform with Baldwin Associates Procedure BAP 3.2.5 (Piping Component Supports), which requires the piece to pivot in all directions without binding. A Deviation Report (DR-3382) was initiated to document this occurrence. Further investigation determined that these male rod extension pieces had also been used on sway strut type supports to connect to the rear bracket (clevis), and therefore binding could also occur at this location. This concern was confirmed by a random inspection of installed sway strut supports which identified several interferences. Additionally, some mechanical snubbers utilize similar male rod extension pieces and could be subject to binding.

The problem was further investigated by the piping support supplier, Basic Engineers. Their investigation found that the interferences were due to accumulative fabrication tolerances provided on BE's data sheets for these types of supports. Investigation by Baldwin Associates determined that, in some cases, overwelding of the eyelet to the threaded rod of the male rod extension piece, as well as overwelding of the rear bracket also contributed to the interferences.

In order to determine the scope of this problem on installed hardware, an inspection program was implemented at Clinton Power Station (CPS). This inspection program utilized personnel employed by Basic Engineers on site to measure the clearances available and the critical dimensions for installed sway struts and snubbers. Using the actual dimensions for each installation, the available freedom of movement was calculated, acceptability of each support determined, and corrective action for each unacceptable support established.

The inspection and resultant analysis has determined that approximately 1,100 installed pipe supports will require rework. The rework generally will consist of an adjustment to existing support hardware. In some cases, however, replacement of existing support hardware will be necessary to obtain the required freedom of movement. A complete listing of affected supports has been developed and work documents are being prepared to control the necessary rework and reinspection.

Investigation has also determined that supports could exist which appear bound in the cold condition, yet adequate clearance may be available due to movement of the hanger resulting from thermal growth of the pipe. Sargent & Lundy (CPS Architect-Engineer) design standards allow the pipe support joint to move within 2° without design compensation. However, in cases where

large thermal movements or short struts are involved, design compensations, such as offsetting the attachments to the pipe and structure, may have been made to accommodate this movement such that the support in its cold setting may appear bound. A list of affected supports with offset attachments has been compiled by Basic Engineers using Sargent & Lundy design drawings; general inspection criteria for these supports have been developed. A limited number of supports (16) require greater clearance than provided in the general inspection criteria. These supports will be inspected to specific design requirements.

Corrective Action

1. Installed supports that do not have the required clearances will be reworked to provide the necessary freedom of movement. This rework will be initiated as follows:
 - a. For non-safety related supports requiring rework, Construction Work Requests (CWRs) or rework orders will be issued to correct the hardware.
 - b. For safety related supports requiring rework, travelers or traveler supplements are being issued/reissued to the field to implement the required rework. The corrected hardware will also be reinspected to assure adequate clearance.
2. To assure that future installations have adequate freedom of movement, the following actions have been taken:
 - a. Baldwin Associates stopped issuing welded male rod extension pieces (BE part Nos. 415-1 and 411-2) to the field and fabrication shops until after an inspection of hanger parts had been performed in each building's lay down area. Defective parts were tagged and segregated to prevent inadvertent use or installation.
 - b. Baldwin Associates Quality Assurance intensified its surveillance of Basic Engineers' fabrication activities at BE's shops.
 - c. Quality Control Instruction QCI-300, Inspection of Piping Component Supports, was revised and issued to include detailed instructions for making binding inspections for non-offset and offset supports. Training was provided to Quality Control inspectors on this matter.
 - d. Basic Engineers has supplied Baldwin Associates Quality Control with feeler gauges to implement the binding checks detailed in QCI-300. The gauges are calibrated in accordance with applicable procedures.

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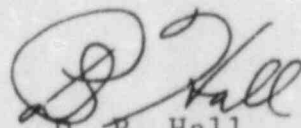
- e. Sargent & Lundy drawing M09-1001N was revised to clarify installation tolerances with regard to pipe supports.

Safety Implications/Significance

It can be postulated that, had the deficiency gone uncorrected, the binding in the pipe support could cause extra stress in the weld attaching the support to the structure, potentially resulting in failure of the weld and support. A pipe support failure could result in piping stresses that exceed ASME Code allowables. On this basis, and due to the extensive rework required to assure that pipe supports adequately perform their intended function, this issue is considered to be reportable under the provisions of 10CFR50.55(e).

It is expected that an extended period of time will be required to fully complete all hardware-related corrective action identified in this report. However, tracking systems have been established to assure that rework is fully implemented and that documentary evidence of its completion is generated and maintained. We trust that this final report provides sufficient information to perform a general assessment of this reportable deficiency and adequately describes our overall approach to resolve the problem.

Sincerely yours,



D. P. Hall
Vice President

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cc: Director, Office of I&E, U.S. NRC, Washington, DC 20555
Illinois Department of Nuclear Safety
NRC Resident Office
INPC Records Center