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Docket No. 50-461

Document Control Desk  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Illinois Power's (IP's) Response to Generic Letter  
(GL) 95-07, "Pressure Locking and Thermal Binding  
of Safety-Relayed Power-Operated Gate Valves,"  
Request for Additional Information (RAI)

Dear Sir:

This letter constitutes IP's response to the May 23, 1996, NRC RAI to GL 95-07.  
Below are the NRC questions and IP's response:

NRC Question:

1. Valves 1E51-F031, RCIC Suppression Pool Suction, and 1E22-F015, HPCS Suppression Pool Suction, may be potentially susceptible to thermally-induced pressure locking from heat transfer from the suppression pool during a design basis event. Has Illinois Power completed any analysis or evaluation of the potential for thermally-induced pressure locking of these valves from heatup of the suppression pool during a design basis event? If so, please provide these analyses or evaluations for our review.

Illinois Power Response:

A qualitative evaluation concludes that the RCIC and HPCS suppression pool suction valves are not susceptible to thermally induced pressure locking due to heat transfer from the suppression pool. The qualitative evaluation is based on the following:

For any significant thermally induced pressure locking to occur, the following three attributes would be required: 1) a water solid bonnet, 2) sealing of both valve disk faces and 3) a bonnet water temperature increase. On the basis of industry test data as collected by Commonwealth Edison and Northeast Utilities, it is highly unlikely that the bonnets of these valves can become water solid. There is no credible mechanism, other than a packing leak, for removal of all of the air from

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them. Packing leaks allowing the bonnet air to be displaced would be incapable of holding thermally induced bonnet pressure during an accident scenario due to the low line pressure that would be available to allow the water to displace the air. Therefore, if the bonnets did become water solid, due to packing leaks, thermally induced pressure locking would not be a concern because the packing would be incapable of holding pressure.

Even if the valve bonnet is assumed to be water solid with the absence of packing leaks, thermally induced pressure locking due to suppression pool heatup is not a concern. The suppression pool heating will not significantly increase the temperature of the bonnet water during accident conditions. These valves are located in horizontal runs of piping in which their centerline is seven or more pipe diameters away from the suppression pool. Due to the distance between the valves and the suppression pool, there will be negligible heat transfer from the suppression pool to them under the no flow conditions when they are closed. The containment wall and manual isolation valves located between the suppression pool and the valves in question would serve as a heat sink further reducing the potential for thermally induced pressure locking.

On the basis of the above evaluation, the thermally induced pressure locking concern due to suppression pool heating identified in the RAI is not a concern for these valves. However, during the evaluation, it was determined that additional investigation of other scenarios for potential thermally induced pressure locking of the valves is warranted. The additional investigation will be completed and the results forwarded by August 2, 1996.

NRC Question:

2. Through review of operational experience feedback, the staff is aware of instances where licensees have completed design or procedural modifications to preclude pressure locking or thermal binding which may have had an adverse impact on plant safety due to incomplete or incorrect evaluation of the potential effects of these modifications. Please describe evaluations and training for plant personnel that have been conducted for each design or procedural modification completed to address potential pressure locking or thermal binding concerns.

Illinois Power Response:

For hardware changes made at Clinton Power Station (CPS), a 10 CFR 50.59 safety evaluation is performed. For the injection valves previously modified such as the HPCS injection valve (1E22-F004), the low pressure core injection (LPCI) "A" and "C" injection valves (1E12-F042A and C) and the low pressure core spray (LPCS) injection valve (1E21-F005), the impact of the change to the containment

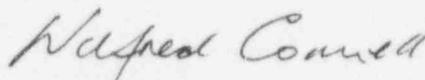
function of the valve was assessed in the safety evaluations. The drilled hole or bypass line is located on the high pressure or reactor side of the injection valve. The side of the valve disk opposite the high pressure or reactor side provides the sealing surface. As such, the impact on the containment isolation function was evaluated and it was not negatively impacted by the modifications. The safety evaluations, for all four valves, addressed both reactor boundary leakage (through the valves) and valve performance in its isolation function. These evaluations determined that no adverse impact occurred due to the modifications on the valves.

For valves that have holes drilled in the disk, the maintenance procedures specifically address disk orientation if the disk is disassembled. The procedure checklists include a line item which must be initialed to assure that the valve disks are in the proper orientation upon reassembly. For valves yet to be modified, the design document will specify disk orientation. Future design changes will also have a 10 CFR 50.59 safety evaluation performed. The containment isolation function and valve leakage will be evaluated for these changes to determine that proposed modifications do not negatively impact valve functionality.

Procedure changes are being made to eliminate potential pressure locking introduced during pressure testing. These changes require that normally closed boundary valves be stroked open after a pressure test. During the pressure test, the system is configured to support the test. Following completion of pressure tests, the normally closed boundary valves as well as other valves in the test boundary will be returned to their desired configuration. For other than system pressure testing, valves will not be stroked for pressure locking concerns. At CPS, no GL 95-07 valves are needed to be stroked for thermal binding concerns.

Attachment 1 provides an affidavit supporting the facts set forth in this letter.

Sincerely yours,



Wilfred Connell  
Vice President

JSP/csm

Attachment

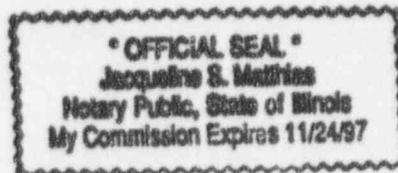
cc: NRC Clinton Licensing Project Manager  
NRC Resident Office, V-690  
Regional Administrator, Region III, USNRC  
Illinois Department of Nuclear Safety

Wilfred Connell, being first duly sworn, deposes and says: That he is Vice President of the Nuclear Program at Illinois Power; that this letter supplying information for Generic Letter 95-07 has been prepared under his supervision and direction; that he knows the contents thereof; and that to the best of his knowledge and belief said letter and the facts contained therein are true and correct.

Date: This 27<sup>th</sup> day of June 1996.

Signed: Wilfred Connell  
Wilfred Connell

STATE OF ILLINOIS      }  
Dewitt COUNTY      } SS.



Subscribed and sworn to before me this 27<sup>th</sup> day of June 1996.

Jacqueline S. Matthias  
(Notary Public)