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L30-96(10 -28)LP
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WC-326-96
October 28, 1996

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) 96-06,
"Assurance of Equipment Operability and Containment
Integrity During Design-Basis Accident Conditions"

Dear Madam or Sir:

This letter is responding to GL 96-06 which requires that addressees determine:

- (1) if containment air cooler cooling water systems are susceptible to either waterhammer or two-phase flow conditions during postulated accident conditions;
- (2) if piping systems that penetrate containment are susceptible to thermal expansion of fluid so that overpressurization of piping could occur.

This response is fulfilling the 120-day written summary report regarding Item (1) for Clinton Power Station (CPS). Item (2) will be further addressed in the 120-day response. The information regarding Item (2) will be supplied as requested within the 120-day time frame specified in the generic letter. Below is a brief synopsis of IP's response. Attachment 2 contains a more detailed report of the GL 96-06 conclusions.

Illinois Power reviewed systems which could be impacted by waterhammer and determined that four lines penetrating containment would meet the criteria necessary to experience a waterhammer phenomenon. These Shutdown Service Water (SX) lines had already been evaluated for waterhammer concerns. CPS has also evaluated the SX flow through these lines and determined no flow is required through these lines.

CPS does not rely on safety-related coolers in containment or the drywell for post Loss of Coolant Accident (LOCA) containment cooling. The drywell non-safety related cooling system and supplemental cooling system can be used for supplemental cooling per

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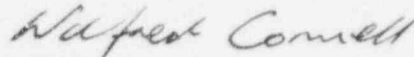
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the emergency operating procedures (EOPs) but are not required. These two systems are closed loops with compression tanks maintaining positive pressure in the systems. Therefore, two phase conditions and subsequent waterhammer would not exist in these systems.

CPS has reviewed applicability to which penetrations could be most affected by thermal expansion and overpressurization. CPS has determined that additional analysis is required for twenty-one penetrations. The results of this analysis will be forwarded in the CPS 120-day response.

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

Sincerely yours,



Wilfred Connell
Vice President

JSP/csm

Attachments

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 96-06 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 28th day of October 1996.

Signed: _____

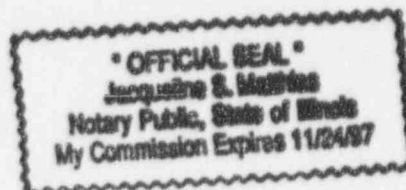
Wilfred Connell

Wilfred Connell

STATE OF ILLINOIS

} SS.

Dewitt COUNTY



Subscribed and sworn to before me this 28th day of October 1996.

Jacqueline S. Mathias
(Notary Public)

Listed below are the requested actions from GL 96-06 and IP's response:

- (1) **if containment air cooler cooling water systems are susceptible to either waterhammer or two-phase flow conditions during postulated accident conditions;**

The containment peak temperature at Clinton Power Station (CPS) is 185°F. Therefore, steam could not be produced in lines that are in the containment unless a substantial vacuum were present (-6.2 psig). Only those lines that could drain down a "sealed high point loop" sufficiently to create a significant vacuum would be susceptible. If the containment penetration is isolated under a containment isolation signal (low reactor pressure vessel level or high drywell pressure) and would not be re-opened, repressurization of the lines and subsequent waterhammer would not be introduced.

CPS does not rely on safety-related coolers for containment cooling. Coolers are used in the Combustible Gas Control Compressor rooms for equipment qualification considerations.

A review of lines penetrating containment was performed. Based on the review, lines associated with the four containment penetrations were identified as potential concerns. The lines are three-inch nominal pipe size and are part of the safety-related shutdown service water (SX) system that provides cooling water to the Combustible Gas Control Compressor room coolers. The SX system, including the piping in question, has been evaluated for waterhammer. In addition, CPS has evaluated the SX supply to the Combustible Gas Control Compressor rooms and determined that no flow is required to maintain equipment qualification.

Drywell temperatures at CPS are higher than in containment. The drywell can reach 330°F which could cause a waterhammer within piping in the drywell if piping went to a two-phased state. The SX lines discussed above do not go into the drywell. It should, however be noted that CPS Emergency Operating Procedure 4402.01 (EOP-6) allows for the defeating of containment isolation interlocks of the non-safety Drywell Cooling (VP) system and supplemental drywell cooling (WO) if drywell temperature cannot be held below 135°F. The design of the WO and VP systems are closed loops with compression tanks that maintain a positive pressure in the system. As such, the lines would not drain down causing vapor cavities in the piping in containment or drywell. Therefore, waterhammer would not be postulated to occur in these two systems.

- (2) **if piping systems that penetrate containment are susceptible to thermal expansion of fluid so that overpressurization of piping could occur.**

A review was performed to identify potentially susceptible penetrations. Penetrations that did not have isolation valves on both the inside and outside of containment were not considered susceptible. These included penetrations such as

suppression pool suction lines which have valves on the outside only. Lines with a means to relieve the pressure such as check valves, relief valves or those which do not contain water were also excluded. After excluding these penetrations, twenty-one penetrations were identified as not meeting the above prerequisites for exclusion. CPS intends to further evaluate these twenty-one penetrations. The results of the analysis will be forwarded to the NRC in the 120-day response.