

Wilfred Connell  
Vice President



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October 30, 1996

Docket No. 50-461

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Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Illinois Power's (IP's) Response to NRC Bulletin 96-03,  
"Potential Plugging of Emergency Core Cooling Suction  
Strainers by Debris in Boiling Water Reactors"

Dear Madam or Sir:

This letter is responding to Bulletin 96-03. The Bulletin requests that licensees of Boiling Water Reactors (BWRs) implement appropriate measures to minimize the potential for clogging of Emergency Core Cooling Systems (ECCS) strainers by debris generated during a Loss of Coolant Accident (LOCA). Three options identified by the staff to minimize the potential for strainer clogging were as follows:

- 1) Installation of a large capacity passive strainer design;
- 2) Installation of a self-cleaning strainer or;
- 3) Installation of a backflush system.

IP's current plan for addressing this issue is to implement Option 1, installation of a large capacity passive strainer design. In addition, IP's long term strategy will include periodic suppression pool and suction strainer cleanings and inspections, and a strengthening of the existing Foreign Material Control (FMC) process to limit debris. The implementation of Option 1 will be accomplished during the seventh refueling outage, RF-7, scheduled to begin in the Spring of 1998. Developing the criteria and periodicity of suppression pool and strainer inspections, and the strengthening of the FMC process will be completed prior to the end of RF-7. The periodicity of suppression pool/weir area and strainer cleanings will be based on the results of subsequent inspections. Attachment 2 provides additional information regarding the implementation of Option 1, cleaning periodicity, and FMC process strengthening.

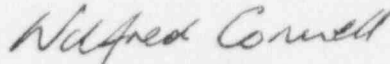
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Attachment 1 provides an affidavit supporting the facts set forth in this letter.

Sincerely yours,



Wilfred Connell  
Vice President

JSP/csm

Attachments

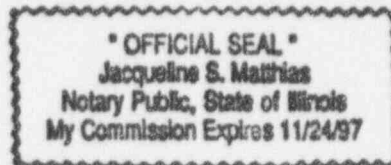
cc: NRC Clinton Licensing Project Manager  
NRC Resident Office, V-690  
Regional Administrator, Region III, USNRC  
Illinois Department of Nuclear Safety

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 Bulletin 96-03 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 30<sup>th</sup> day of October 1996.

Signed: *Wilfred Connell*  
Wilfred Connell

STATE OF ILLINOIS        } SS.  
                                      }  
Dewitt COUNTY            }



Subscribed and sworn to before me this 30<sup>th</sup> day of October 1996.

*Jacqueline S. Matthias*  
(Notary Public)

Bulletin 96-03, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors," requested licensees to take the following actions:

1. Implement appropriate procedural measures and plant modifications to minimize the potential for clogging of the Emergency Core Cooling System (ECCS) suppression pool suction strainers by debris following a Loss of Coolant Accident (LOCA).
2. Provide a report within 180 days of the date of the bulletin describing whether the licensee intends to comply with the requested actions, including a description of planned actions and mitigative strategies, a schedule for implementation and proposed Technical Specification changes, if appropriate.

It requests that licensees complete item 1 by the end of the first refueling outage starting after January 1, 1997. In addition, the bulletin requires licensees to provide a report confirming completion and summarizing any actions taken within 30 days of completion of all requested actions.

The bulletin identifies three potential resolution options which the staff believes could be implemented to provide a level of assurance that the ECCS will be able to perform its safety function following a LOCA. In addition, the bulletin states that licensees may propose other options which provide an equivalent assurance that the ECCS will be able to perform its safety function following a LOCA. The options identified by the staff are:

- 1) Installation of a large capacity passive strainer design;
- 2) Installation of a self-cleaning strainer or;
- 3) Installation of a backflush system.

Illinois Power has evaluated the three options listed above and has determined that the following actions will be used to provide a level of assurance that the ECCS will be available following a LOCA.

- 1) Installation of larger capacity, passive suction strainers [Option 1];
- 2) Performance of periodic inspections of the pool and ECCS suction strainers and performing cleaning operations as necessary, (in addition to the continuous suppression pool cleaning system) and;
- 3) Strengthening the existing Foreign Material Control process to ensure that limited debris is available to be drawn into the suction strainers.

The above actions will be completed prior to the end of the seventh refueling outage (RF-7), scheduled to begin in the Spring of 1998. Clinton Power Station is currently performing RF-6.

Essentially, 100% of the thermal piping insulation used in the drywell is reflective metallic insulation (RMI). The exceptions are a small number of locations where a minimal amount of different insulation was used due to space limitations. Based on the results of testing performed for the Boiling Water Reactors Owner's Group, suction strainer head loss due to LOCA generated RMI debris would be small and would not prevent ECCS from performing its design basis function. However, the size of the existing strainers provides only minimal margin for the combination of other types of operational and LOCA generated debris. As a result, Illinois Power currently plans to replace the existing strainers with larger capacity passive strainers to increase the available margin.

The replacement strainer design will be installed on each of the three Residual Heat Removal (RHR) systems, the Low Pressure Core Spray (LPCS) system and the High Pressure Core Spray (HPCS) system. In addition to these systems, the suction strainer size for the Reactor Core Isolation Cooling (RCIC) system will be evaluated to determine if it should be increased. The replacement strainer design currently being considered is a stacked disk design constructed of perforated plate. However, an alternate design may be selected during the final design process. Regulatory Guide 1.82, "Sumps for Emergency Core Cooling and Containment Spray Systems," will be used to provide guidance for sizing the replacement strainers. The replacement strainers will be sized to accommodate the maximum loading of fibrous material and other types of debris that would be expected from any credible combination of accident and operational debris during a design basis event. Instead of postulating the maximum potential insulation debris that may be generated for LOCAs at various break locations, as recommended by Bulletin 96-03, the strainer sizing calculations will assume the maximum strainer pressure drop that RMI is capable of producing.

Due to having essentially 100% RMI inside the drywell, the contribution of fibrous debris from insulation sources into the suppression pool would not be significant during a LOCA. The majority of LOCA introduced fibrous debris will come from dirt or dust inside the drywell, from containment areas within the suppression pool swell zone, and from any postulated containment spray scenario.

CPS does not plan to implement Technical Specification changes for the replacement strainers. CPS has implemented the new Standard Improved Technical Specifications which removed many of the previously included inspection surveillances and placed them into plant programs and procedures. Periodic inspection criteria for maintaining ECCS suction strainer cleanliness will be incorporated into the CPS Inservice

Inspection Program, as necessary. In accordance with the recommendation of the bulletin, the results of strainer inspections will be used to evaluate the operability of the ECCS as a whole and the appropriate action statements will be entered as necessary.

In addition to replacement of the ECCS suction strainers during RF-7, the following activities are planned during RF-6 to provide data for sizing the replacement strainers and to minimize the potential for clogging of the existing strainers until they are replaced:

1. Suppression pool cleaning and vacuuming including the weir area of the suppression pool will be completed.
2. Drywell cleaning to reduce potential LOCA generated debris sources will be completed.
3. Sampling and analyses will be performed on the debris removed from the suppression pool and strainer surfaces during cleaning. The samples will be analyzed to determine the characteristics of the deposited material which may lead to potential strainer clogging.
4. Sample monitoring of suppression pool water will continue to be performed.

Within 30 days of completion of the modifications and procedure changes taken to resolve the concerns identified in Bulletin 96-03, Illinois Power will provide the NRC with a report which summarizes the actions taken.