

AmerGen Energy Company, LLC  
Clinton Power Station  
R R. 3 Box 228  
Clinton, IL 61727-9351

RS-03-066

March 28, 2003

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Subject: Additional Information Supporting the License Amendment Request to Revise  
Suppression Pool Water Level and Upper Containment Pool Water Level  
Requirements in Mode 3

References: (1) Letter from K. R. Jury (Exelon Generation Company, LLC) to U.S. NRC,  
"Request for License Amendment to Appendix A, Technical Specifications to  
Revise Suppression Pool Water Level and Upper Containment Pool Water  
Level Requirements in Mode 3," dated November 16, 2001

(2) Letter from K. R. Jury (Exelon Generation Company, LLC) to U.S. NRC,  
"Additional Information Supporting the License Amendment Request to  
Revise Suppression Pool Water Level and Upper Containment Pool Water  
Level Requirements in Mode 3," dated October 4, 2002

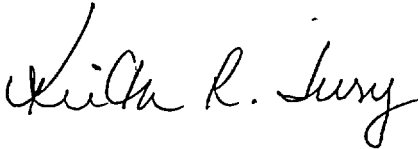
In Reference 1, AmerGen Energy Company (AmerGen), LLC submitted a request for changes to the Facility Operating License No. NPF-62 and Appendix A to the Facility Operating License, Technical Specifications (TS), for Clinton Power Station (CPS) to revise suppression pool water level and upper containment pool water level requirements in Mode 3. Specifically, the proposed changes in Reference 1 requested the revision of the allowable operating range for the suppression pool water level and the modes of applicability for the upper containment pools. The affected specifications are TS Section 3.6.2.2, "Suppression Pool Water Level," and TS Section 3.6.2.4, "Suppression Pool Makeup (SPMU) System." Additional information concerning the proposed changes was provided in Reference 2. Furthermore, the NRC requested additional follow-up information regarding the information provided in the above references. The attachment to this letter provides the requested information.

A001

March 28, 2003  
U. S. Nuclear Regulatory Commission  
Page 2

Should you have any questions related to this information, please contact Mr. Timothy A. Byam at (630) 657-2804.

Sincerely,



Keith R. Jury  
Director – Licensing and Regulatory Affairs  
Mid-West Regional Operating Group  
AmerGen Energy Company, LLC

Attachments:

- Attachment 1 Affidavit
- Attachment 2 Additional Information Supporting the License Amendment Request to Revise  
Suppression Pool Water Level and Upper Containment Pool Water Level  
Requirements in Mode 3

cc: Regional Administrator – NRC Region III  
NRC Project Manager, NRR – Clinton Power Station  
NRC Senior Resident Inspector – Clinton Power Station  
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

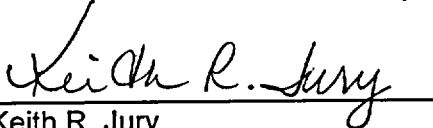
ATTACHMENT 1  
Affidavit

STATE OF ILLINOIS )  
COUNTY OF DUPAGE )  
IN THE MATTER OF )  
AMERGEN ENERGY COMPANY, LLC ) Docket Number  
CLINTON POWER STATION, UNIT 1 ) 50-461

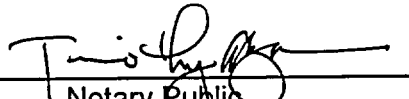
**SUBJECT: Additional Information Supporting the License Amendment Request to Revise Suppression Pool Water Level and Upper Containment Pool Water Level Requirements in Mode 3**

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.

  
Keith R. Jury  
Director – Licensing and Regulatory Affairs  
Mid-West Regional Operating Group  
AmerGen Energy Company, LLC

Subscribed and sworn to before me, a Notary Public in and  
for the State above named, this 28<sup>th</sup> day of  
March, 2003.

  
Notary Public



## ATTACHMENT 2

### **Additional Information Supporting the License Amendment Request to Revise Suppression Pool Water Level and Upper Containment Pool Water Level Requirements in Mode 3**

#### Question 1

***In the calculation of the entrapped drywell volume (inside the weir wall), is the volume of structures and equipment within this volume deducted? If so, what assurance is there that the assumptions in the analysis will remain valid?***

#### Response 1

Yes, the volume of equipment and structures in the bottom of the drywell has been deducted in the analysis that determines the entrapped drywell volume. The volume of equipment and equipment foundations credited in the Clinton Power Station (CPS) drywell fill volume calculation is 876 cubic feet. This is equivalent to about 1.5 percent of the entrapped drywell volume and is equivalent to 1.4 inches of suppression pool water level. Removing or replacing permanent plant equipment would require a plant modification in accordance with procedure CC-AA-10, "Configuration Control Process Description." An integral part of the configuration control process is to identify any calculations that are impacted by the design change. The determination of the entrapped drywell volume, including the equipment and structures that are deducted from the gross volume, are documented in a CPS calculation. If the entrapped drywell volume is revised as part of the design change process, this calculation would be required to be identified as impacted.

#### Question 2

***Why is there no large-break-LOCA-with-suppression-pool-bypass calculation? Doesn't this calculation determine the minimum operator response time to limit break flow in order to minimize entrapped water in the drywell volume? Doesn't this analysis also determine the time necessary to refill the suppression pool from an external source to make up for continued steaming from the vessel and ECCS makeup to the vessel? (See Section 4.3.7 of the Grand Gulf letter to the NRC dated February 25, 2002.)***

#### Response 2

CPS Updated Safety Analysis Report (USAR) Section 6.2.1.1.5 describes the analysis of the steam bypass of the suppression pool. USAR Subsection 6.2.1.1.5.4 describes the analysis without crediting containment spray and heat sinks and describes the limiting break as being a small primary system break. USAR Section 6.2.1.1.5.4 establishes that the small break LOCA was the basis for the CPS licensing basis bypass leakage analysis. USAR Section 6.2.1.1.5.5 then describes the analysis of a small break LOCA with credit for containment spray and heat sinks. The analysis described in this section establishes the limiting bypass leakage. CPS Safety Evaluation Report (Reference 1) Section 6.2.1.7, concluded that the proposed bypass leakage was acceptable. It also determined that the analyses could be considered to cover all break sizes. This conclusion is consistent with the comparison between CPS and the response of other Mark III plants to Humphrey concern 5.1.

The GOTHIC analysis described in the proposed license amendment request (Reference 2) modeled a small break with controlled depressurization as described in the CPS USAR. In addition, a sensitivity analysis was performed using GOTHIC to

## ATTACHMENT 2

### **Additional Information Supporting the License Amendment Request to Revise Suppression Pool Water Level and Upper Containment Pool Water Level Requirements in Mode 3**

determine the effect a large break (2.5 ft<sup>2</sup>) would have on the containment pressure assuming the same bypass leakage area. The area of a CPS main steam safe end is 2.55 ft<sup>2</sup> and the area of the main steam pipe is slightly smaller. This sensitivity analysis was performed for the reduced vessel pressure case with two different sets of assumptions. The assumptions used for the base case (small break LOCA) and each of the two sensitivity cases are as follows:

**Base Case:** A small break (0.05 square feet), 250 psia starting vessel pressure,  $A/\sqrt{K} = 1.0$  ft<sup>2</sup>, containment spray does not operate, operators do not control RPV level as described for the base analysis for the proposed amendment, and no credit is taken for the condensation caused by the ECCS fluid spilling into the drywell.

**Sensitivity Case 1:** A large break (2.5 square feet), 250 psia starting vessel pressure,  $A/\sqrt{K} = 1.0$  ft<sup>2</sup>, containment spray operates, and operators control RPV level as described for the base case analysis for the proposed amendment.

**Sensitivity Case 2:** A large break (2.5 square feet), 250 psia starting vessel pressure,  $A/\sqrt{K} = 1.0$  ft<sup>2</sup>, containment spray does not operate, operators do not control RPV level, and the bottom of the drywell floods.

In both Sensitivity Cases 1 and 2, the peak containment pressure is less than in the base case. In all cases, the peak pressure is less than the containment design pressure. In Case 2, the containment spray initiation setpoint is not reached. In none of the three cases is make-up required from outside the containment to maintain a minimum of 2 feet of vent coverage.

Based on the results of these analyses, it was not necessary to determine an operator action time to limit the amount of water that collects in the bottom of the drywell.

#### **Question 3**

***Why is there no analysis of the "dump time" vs. "pump time" for the revised suppression pool makeup system? (See the same Grand Gulf letter to the NRC, Section 4.3.8.) (See Clinton FSAR Section 6.2.7.1.j)***

#### **Response 3**

The dump time versus pump time calculation that was prepared for the current configuration is not adversely affected by the proposed license amendment request and therefore was not discussed in Reference 2. This is because the volume that is dumped is smaller in the Reference 2 analysis than the amount assumed for the current configuration; however, the line size, minimum head of water that serves as a forcing function, and initiating signals are unchanged. With the upper containment pool gates installed and the reactor cavity not drained, the dump time is more than 2 minutes shorter than the pump time. The calculation that documents the development of the GOTHIC model for the revised suppression pool makeup system addresses the reduced

## **ATTACHMENT 2**

### **Additional Information Supporting the License Amendment Request to Revise Suppression Pool Water Level and Upper Containment Pool Water Level Requirements in Mode 3**

dumping time due to the smaller volume of water to be dumped. The additional margin provided with the upper pool drained was not specifically calculated.

#### **Reference:**

1. NUREG-0853, "Safety Evaluation Report related to the operation of Clinton Power Station, Unit No. 1, Docket 50-461," dated February 1982.
2. Letter from K. R. Jury (Exelon Generation Company, LLC) to U. S. NRC, "Request for License Amendment to Appendix A, Technical Specifications to Revise Suppression Pool Water Level and Upper Containment Pool Water Level Requirements in Mode 3," dated November 16, 2001