

AmerGen Energy Company, LLC  
Clinton Power Station  
R.R. 3 Box 228  
Clinton, IL 61727-9351  
Phone: 217-935-8881

RS-02-019

January 24, 2002

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: Supplemental Reactor Systems Information Supporting the License  
Amendment Request to Permit Up-rated Power Operation at Clinton Power  
Station

- References:
- (1) Letter from J. M. Heffley (AmerGen Energy Company, LLC) to U.S. NRC,  
"Request for License Amendment for Extended Power Uprate Operation,"  
dated June 18, 2001
  - (2) Letter from J. B. Hopkins (U.S. NRC) to O. D. Kingsley (Exelon Generation  
Company, LLC), "Clinton Power Station, Unit 1 – Request For Additional  
Information (TAC No. MB2210)," dated November 5, 2001
  - (3) Letter from K. R. Jury (Exelon Generation Company, LLC) to U.S. NRC,  
"Additional Reactor Systems Information Supporting the License  
Amendment Request to Permit Up-rated Power Operation at Clinton Power  
Station," dated November 21, 2001

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 allow operation at an up-rated power level. The proposed changes in Reference 1 would allow CPS to operate at a power level of 3473 megawatts thermal (MWt). This represents an increase of approximately 20 percent rated core thermal power over the current 100 percent power level of 2894 MWt. The NRC in Reference 2 requested additional information regarding the proposed changes in Reference 1. Reference 3 provided the requested information.

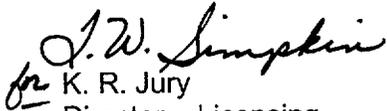
The NRC, in a conference call on January 14, 2002, requested clarification on a portion of the information provided in Reference 3. Specifically, RAI Question 3.18 requested confirmation that CPS Emergency Operating Procedures (EOPs) will be consistent with the recommendations for anticipated transients without scram (ATWS) operator actions. The NRC indicated that the response provided did not clearly address the deviations from the generic evaluations performed for ATWS instability events in a BWR/6. The attachment to this letter provides the supplemental information requested.

A001

January 24, 2002  
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.

Respectfully,

  
for K. R. Jury  
Director – Licensing  
Mid-West Regional Operating Group

Attachments:

Affidavit

Attachment: Supplemental Reactor Systems Information Supporting the License Amendment Request to Permit Uprated Power Operation at Clinton Power Station

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

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

**SUBJECT: Supplemental Reactor Systems Information Supporting the License Amendment Request to Permit Up-rated Power Operation at Clinton Power Station**

**AFFIDAVIT**

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

  
\_\_\_\_\_  
T. W. Simpkin  
Manager – Licensing

Subscribed and sworn to before me, a Notary Public in and  
for the State above named, this 24<sup>th</sup> day of  
January, 2002.

  
\_\_\_\_\_  
Notary Public



## ATTACHMENT

### **Supplemental Reactor Systems Information Supporting the License Amendment Request to Permit Up-rated Power Operation at Clinton Power Station**

#### Question 3.18:

*The EPU submittal did not address whether operation at the higher MELLLA/EPU operation with introduction of GE14 fuel might affect the potential for and impact of thermal-hydraulic instability. Section L.3.1, "Power Conditions for ATWS Evaluation," and L.3.2, "Operator Action," of the ELTR1 discuss some aspects of the ATWS instability and typical ATWS operator actions. NEDO-32047-A, "ATWS Rule Issues Relative to BWR Core Thermal-hydraulic Stability," provided generic evaluations of ATWS instability events for BWR/5 and BWR/6.*

*Confirm that the power shape assumed in NEDO-32047-A bounds the conditions expected for Clinton during ATWS.*

*Confirm that the Clinton EOPs will be consistent with the recommendations of ELTR1 and the Nuclear Regulatory Commission (NRC) staff's positions in NEDO-32047-A SER.*

#### Response 3.18:

The response to the first part of question 3.18 (i.e., confirmation of power shape) is provided in Reference 1. As stated in that response, the axial power shape assumed in NEDO-32047-A may not bound that in the Clinton Power Station (CPS) extended power uprate (EPU) at middle of cycle. However, the difference is relatively minor and there is sufficient margin in energy deposition. The slightly higher peak values in axial power shape would yield an acceptable energy deposition value.

The required operator actions during ATWS events listed in Reference 2 (ELTR1), Section L.3.2 mitigate extended dryout and excessive power generation and, therefore, maintain the integrity of the reactor vessel, fuel and containment. These actions are consistent with the ATWS mitigation strategy recommended in Emergency Procedure Guidelines (EPG). Hence, the required operator actions ensure the reactor system integrity. The current CPS emergency operating procedure (EOP) actions for ATWS are not changed for EPU conditions. The specified actions are consistent with the "typical" actions listed in Reference 2, Section L.3.2.

In 1996, the NRC issued a safety evaluation supporting the use of the BWR Owners' Group proposed strategy of lowering reactor vessel water level during an ATWS to a point where subcooling (i.e., the major contributor to core instabilities) would be eliminated. As a result, changes were made to Revision 4 of the EPGs to address this new guidance on ATWS stability actions. Emergency Procedure Guidelines/Severe Accident Guidelines (EPG/SAG), Revision 1 subsequently superseded Revision 4 of the EPGs which contained no provisions for severe accident guidance. The ATWS instability changes made to Revision 4 of the EPGs were incorporated into EPG/SAG Revision 1 and therefore the ATWS strategy was the same between these two versions of the EPGs. CPS EOPs are currently based on EPG/SAG Revision 1. The CPS EOPs are consistent with the ATWS operator actions specified in EPG/SAG Revision 1 up to the point where water level is lowered to the top of active fuel. The EPG/SAG Revision 1 directs the operator to lower water level below the top of active fuel level with the reactor pressure vessel pressurized. It is at this point that CPS has taken a deviation from the EPGs. The CPS EOPs do not direct the operator to lower the water level below top of active fuel. If water level cannot be maintained above the top of active fuel, the operator is directed to depressurize the vessel and then maintain level above the

## ATTACHMENT

### **Supplemental Reactor Systems Information Supporting the License Amendment Request to Permit Uprated Power Operation at Clinton Power Station**

Minimum Steam Cooling Reactor Water Level as read from the Fuel Zone instruments. This deviation from the EPG/SAG Revision 1 has been evaluated by CPS and determined to be acceptable in accordance with 10 CFR 50.59, "Changes, tests and experiments."

In summary, CPS has implemented an ATWS mitigation strategy that is consistent with Reference 2 as well as the NRC staff's positions in NEDO-32047-A SER. The only deviation CPS has taken from the EPGs has been evaluated and it has been determined to be acceptable. This strategy is not changed for EPU conditions.

### REFERENCES

1. Letter from K. R. Jury (Exelon Generation Company, LLC) to U.S. NRC, "Additional Reactor Systems Information Supporting the License Amendment Request to Permit Uprated Power Operation at Clinton Power Station," dated November 21, 2001
2. General Electric Company Licensing Topical Report, "Generic Guidelines for General Electric Boiling Water Reactor Extended Power Uprate," NEDC-32424P-A, Class III, February 1999