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An Exelon/British Energy Company

RS-01-312

December 26, 2001

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

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

Subject: Additional Reactor Pressure Vessel Fluence 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 Up-rate 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 October 3, 2001
 - (3) Letter from K. A. Ainger (Exelon Generation Company, LLC) to U.S. NRC, "Additional Information Supporting the License Amendment Request to Permit Up-rated Power Operation at Clinton Power Station," dated October 17, 2001
 - (4) Letter from K. R. Jury (Exelon Generation Company, LLC) to U.S. NRC, "Additional Reactor Pressure Vessel Fluence Information Supporting the License Amendment Request to Permit Up-rated Power Operation at Clinton Power Station," dated December 13, 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. The requested information included questions concerning reactor pressure vessel fluence. AmerGen responded to this request in Reference 3. In a November 13, 2001 telephone conference call between representatives of the NRC and

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AmerGen, the NRC requested additional information concerning our Reference 3 response. Reference 4 provided the information requested by the NRC. A second telephone conference call between representatives of the NRC and AmerGen was conducted on December 19, 2001. In this conference call the NRC requested additional information concerning our response provided in Reference 4. The attachment to this letter provides the information requested by the NRC.

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: Additional Reactor Pressure Vessel Fluence Information Supporting the License Amendment Request to Permit Up-rated Power Operation at Clinton Power Station

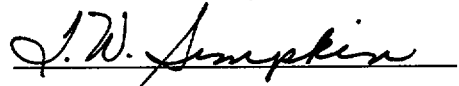
cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Clinton Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

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

**SUBJECT: Additional Reactor Pressure Vessel Fluence Information
Supporting the License Amendment Request to Permit Upgraded
Power Operation at Clinton Power Station**

AFFIDAVIT

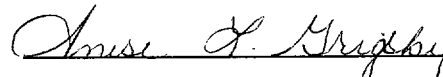
I affirm that the content of this transmittal is true and correct to the best of my
knowledge, information and belief.


T. W. Simpkin
Manager – Licensing
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 26 day of

December, 2001.


Notary Public



ATTACHMENT

Additional Reactor Pressure Vessel Fluence Information Supporting the License Amendment Request to Permit Up-rated Power Operation at Clinton Power Station

Question

Describe how the flux is integrated for pre-EPU and post-EPU to determine the integrated fluence to end-of-license. Also, describe the factors that show that the pre-EPU flux is conservative compared to the post-EPU flux.

Response

Because the flux for the pre-EPU calculation was very conservative, the fluence to end-of-license was not the integration of pre and post-EPU flux. Rather, the pre-EPU flux was used for the entire license from 0 EFPY to 32 EFPY.

The following are the reasons why the pre-EPU flux is conservative as compared to the post-EPU flux:

1. **An upper-bound capsule flux wire measurement was used.** The pre-EPU flux is based on an upper-bound capsule flux wire measurement (that is, the upper-bound value is 25% higher than the measured flux).
2. **The NRC approved calculation confirms that the pre-EPU flux bounds the post-EPU flux.** The capsule flux for post-EPU using the NRC approved methodology is bounded by the upper-bound pre-EPU flux.
3. **The lead factor of 0.67 is conservative.** The upper-bound measured flux is divided by the lead factor to determine the RPV ID flux. The pre-EPU lead factor of 0.67 was determined using a generic two-dimensional Discrete Ordinance Transport (DOT) computer program. The flux calculation is conservative because the DOT calculation did not include the jet pump shadowing effect. The jet pump shadows the RPV ID flux location around 30° and 60°, which is the same location that the DOT program predicted the peak azimuthal flux. Therefore, the flux is actually lower than predicted by the DOT calculation and the lead factor of 0.67 is conservative. That is because the lead factor equals the peak RPV ID flux/capsule flux, the lead factor increases when the peak RPV ID flux decreases. The jet pumps do not shadow the capsule location (the capsule was located at 3°).
4. **The NRC approved calculation confirms that the 0.67 lead factor is conservative.** The lead factor of 0.94 for post-EPU was determined using the NRC approved methodology. This lead factor further confirms that the pre-EPU lead factor of 0.67 is conservative.

Consequently, using the upper-bound pre-EPU flux to determine fluence from beginning to end of license is conservative.