July 26, 2005

Mr. Christopher M. Crane, President
and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, Illinois 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION RE: APPLICATION OF ALTERNATIVE SOURCE TERM METHODOLOGY (TAC NO. MB8365)

Dear Mr. Crane:

By letter dated April 3, 2003, as supplemented by letters dated December 23, 2003, December 9 and 17, 2004, and March 30, 2005, AmerGen Energy Company, LLC, submitted a request for changes to the Technical Specifications that support application of an alternative source term methodology at the Clinton Power Station, Unit 1.

Based on our review of your submittal, the U.S. Nuclear Regulatory Commission (NRC) staff finds that a response to the enclosed request for additional information is needed before we can complete the review. This request for additional information was previously forwarded to your staff; and on July 25, 2005, it was discussed with them. Your staff agreed that a response would be provided on or before August 26, 2005. If the response is not provided by the agreed upon date, AmerGen should notify the NRC staff in writing. Upon written notification, a new date may be established with agreement from the NRC staff. Alternatively, the NRC staff may act on your request consistent with 10 CFR 2.108, Denial of application for failure to supply information.

If you have any comments or questions, please contact me at (301) 415-1496.

Sincerely,

/RA/

Kahtan N. Jabbour, Senior Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure: As stated

cc: See next page

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OFFICE	PM:PD3-2	LA:PD3-2	SC:SPSB (A)	SC:PD3-2
NAME	KJabbour	PCoates	ADrozd	GSuh
DATE	7/26/05	7/26/05	7/26/05	7/26/05

OFFICIAL RECORD COPY

Clinton Power Station, Unit 1

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REQUEST FOR ADDITIONAL INFORMATION

APPLICATION OF ALTERNATIVE SOURCE TERM METHODOLOGY

AMERGEN ENERGY COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1. Clinton's use of the main steam line aerosol deposition methodology from AEB-98-03, "Assessment of Radiological Consequences for the Perry Pilot Plant Application Using the Revised (NUREG-1465) Source Term," appears to be non-conservative. Please address the following concerns:

   a. AEB-98-03 modeling assumed 2 removal nodes in each of the unbroken steam lines, with each segment well-mixed. The broken steam line was modeled as one segment (removal node). Clinton extrapolates use of the AEB-98-03 methodology by modeling main steam line deposition in 3 nodes, using the same 50^{th} percentile deposition rate value (deposition velocity) in each node. The staff thinks that this use overestimates the deposition in the later nodes. The model currently used by Clinton assumes the same rate of deposition in each node which is ultimately based on a particle size distribution that has not undergone any change through deposition in upstream nodes. In other words, the removal of the larger, more quickly and easily deposited aerosols would change the size distribution of aerosols in the piping in later piping segments. These later piping segments would be expected to have a higher concentration of smaller aerosols that would be less likely to be deposited, and the deposition velocity in these segments (modeled as removal nodes) should be reduced to reflect this change. Please discuss whether your aerosol deposition model accounts for or otherwise addresses this change in the aerosol size distribution due to deposition in upstream piping.

   b. The calculated aerosol removal rate increases over time (as indicated in the licensee's spreadsheet calculation of equivalent aerosol filter efficiency in Appendix A of the March 30, 2005 submittal), where the staff would expect the removal rate to decrease over time because most of the easily deposited aerosols have already been deposited in previous time periods. Please discuss whether your aerosol deposition model accounts for or otherwise addresses this change in the aerosol size distribution over time due to deposition.

c. Half of the pipe circumference was multiplied by the pipe segment length to estimate the aerosol settling area. This formulation appears to include essentially vertical sections of pipe in the settling area, and thus may be non-conservative. Please discuss the effect of including vertical sections, if any, in the estimated aerosol settling area and the resultant effect on aerosol removal.

2. Please address these further considerations with respect to the modeling of main steam line deposition:

   a. What is the effect of the decay heat from deposited material in the main steam piping with respect to iodine re-evolution?

   b. The report on which the elemental iodine deposition rate was based ("MSIV Leakage Iodine Transport Analysis," J.E. Cline, August 20, 1990) also includes resuspension and conversion. Have you considered the effect of resuspension and conversion on the elemental iodine deposition rate?

   c. Does the pipe wall temperature used in elemental iodine deposition modeling account for the decay heat of the deposited material in the pipe? How would this additional source of heat affect the deposition assumed?

3. By licensee letter (RS-03-239), dated December 23, 2003, in response to NRC staff's Question 9, it was stated that the LOCA analysis would no longer credit a 50 percent reduction in the feedwater isolation valve (FWIV) leak rate after 24 hours. The correction would be noted in Table 4, "Key LOCA Analysis Inputs and Assumptions" when a revised analysis would be subsequently submitted. The revised analysis was submitted by licensee letter (RS-05-033), dated March 30, 2005. In revised Table 4, the 50 percent reduction in FWIV leak rate after 24 hours does not appear to have changed. Is this assumption used in the revised LOCA analysis?

4. The staff understands how the new filter penetrations requested in the submittal were developed. However, the staff requests that the licensee provide technical data and information to show that the filter, if they were tested and used in the degraded state, would provide satisfactory performance for the entire surveillance period and be sufficiently capable of mitigating an event if it were needed. The staff has reasonable assurance that filters tested in accordance with the criteria set forth in Regulatory Guide (RG) 1.52 Revision 2 or Revision 3, which incorporated a safety factor of 2 or greater, would provide adequate performance to protect public health and safety. A number of studies and data have been developed which confirm adequate performance at the conditions specified in the RG. For penetrations that exceed the values listed in the RG, the staff has no data upon which to base degraded filter performance and thus requires this information to assess the impact on safety.