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U.S. Nuclear Regulatory Commission
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Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Results of Three-Dimensional Structural Analysis of the Oyster Creek Drywell Shell, Associated with AmerGen's License Renewal Application (TAC No. MC7624)

Reference: AmerGen Energy Company, LLC Letter to the Nuclear Regulatory Commission, "Commitment Clarifications Related to the Aging Management Program for the Oyster Creek Drywell Shell, Associated with AmerGen's License Renewal Application (TAC No. MC7624)," dated January 14, 2008

In the referenced letter, AmerGen Energy Company, LLC (AmerGen) clarified its previous commitment to perform a modern three-dimensional (3D) structural analysis of the Oyster Creek drywell shell and stated that a summary of the results of the 3D analysis would be submitted to the NRC prior to the period of extended operation. This correspondence provides notification that the commitment to perform this analysis has been completed, and transmits a summary of the results of the analysis. The anticipated license condition in the renewed license is also satisfied by the completion of the analysis and submittal of this summary.

Enclosure 1 is a 266-page summary report describing the base case, in which the Oyster Creek drywell shell was modeled using realistic but conservative drywell shell thickness values as input (based upon actual thickness readings taken in 2006 and confirmed in 2008) to derive the current safety factors. The results of this base case analysis are as follows:

1) For normal operating conditions, the limiting condition is the refueling condition. For this condition, the current safety factor of the limiting sand bed bay is 3.54, which results in a safety margin greater than the ASME Code-specified safety factor of 2.0.

2) For emergency conditions, the limiting condition is the post-accident flooding condition. For this condition, the current safety factor of the limiting sand bed bay is 2.02, which results in a safety margin greater than the ASME Code-specified safety factor for Service Level D conditions of 1.34. Service Level D conditions are typically used for this load combination. Even with the Oyster Creek current licensing basis' use of the more conservative Service Level C conditions, the current drywell safety factor of 2.02 still

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results in a safety margin greater than the ASME Code-specified safety factor for Service Level C of 1.67.

Enclosure 2 is a 128-page summary report of a sensitivity analysis study performed on the base case. This report demonstrates that significant thickness changes could occur, in the future, or measurement uncertainties could exist, without a significant reduction in margin to ASME Code-specified safety factors:

1. The first sensitivity study modeled a thickness reduction of 100 mils in a large locally thinned area of Bay 1 in the sand bed region. This study calculated a minimum safety factor of 3.21 (versus 2.0 specified) in the refueling case and 2.01 (versus 1.67 specified for Service Level C) in the post-accident flooding case, resulting in adequate safety margin to the ASME Code safety factors.

2. The second sensitivity study modeled a thickness reduction of 50 mils in the entire Bay 19, one of the thinnest modeled bays. The minimum safety factor was 3.46 (versus 2.0 specified) in the refueling case and 1.98 (versus 1.67 specified for Service Level C) in the post-accident flooding case, also resulting in adequate safety margin to the ASME Code safety factors.

The Advisory Committee on Reactor Safeguards (ACRS) described AmerGen's commitment in its February 8, 2007 letter to Chairman Klein:

> The applicant has committed to perform a 3D finite-element analysis of the OCGS drywell to determine the margin of the shell in the as-found condition using modern methods. This analysis will provide a more accurate quantification of the margin above the Code required minimum for buckling. ... The analysis should include sensitivity studies to determine the degree to which uncertainties in the size of thinned areas affect the Code margins.

As described above and in Enclosures 1 and 2, this modern analysis has been completed and has more accurately quantified the current drywell shell safety margin above the ASME Code minimum specifications. Also, the analysis shows that significant thickness changes could occur, or measurement uncertainties could exist, without a significant reduction in the margin to ASME Code minimum safety factors.

If you have any questions, please contact John O'Rourke of my staff, at 610-765-5089.

Respectfully,

Michael P. Gallagher
Vice President, License Renewal
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Enclosures: 1. Three-Dimensional Structural Analysis Results – Base Case
2. Sensitivity Analysis for Three-Dimensional Structural Analysis

cc: Regional Administrator, USNRC Region I
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USNRC Project Manager, NRR - Project Manager, OCGS
USNRC Senior Resident Inspector, OCNGS
Bureau of Nuclear Engineering, NJDEP
File No. 05040