June 22, 2007

Dr. Jill Lipoti
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Safety and Health
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SUBJECT: RESPONSE TO COMMENTS ON SAFETY EVALUATION REPORT WITH OPEN ITEMS RELATED TO THE LICENSE RENEWAL OF OYSTER CREEK GENERATING STATION, AUGUST 2006

Dear Dr. Lipoti:

By letter dated October 31, 2006, you provided comments and questions by the State of New Jersey Department of Environmental Protection, Bureau of Nuclear Engineering, concerning our "Safety Evaluation Report with Open Items Related to the License Renewal of Oyster Creek Generating Station," which was issued in August 2006. You indicated that your comments should be addressed in the safety evaluation report (SER).

We have considered your comments and questions, and addressed them in the attached responses. Some questions were outside license renewal, and some comments required no response. The staff has revised portions of the SER on the basis of additional commitments and information provided by the applicant in response to open items and recommendations from the Advisory Committee on Reactor Safeguards.

Should you have any further questions, please contact me at 301-415-3191.

Sincerely,

/RA/

Donnie J. Ashley, Project Manager
License Renewal Branch A
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-219

Enclosure:
As stated

cc w/encl: See next page

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ADAMS Accession No.: ML071550010
* Concurrence via email
** Concurrence via telephone
Document Name:C:\FileNet\ML071550010.wpd

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NRC Staff Response to State of New Jersey Comments and Questions on
"Safety Evaluation Report with Open Items Related to the License Renewal of Oyster Creek Generating Station"

Number	Issue	Comments	NRC Response
1	Drywell Corrosion Rates (SER pages 1-8 and 4-49)	The paragraph(s) "The measurements… (every other refueling outage)" refers to the calculation of corrosion rates for the drywell thickness which "bound" the corrosion rates in the upper cylinder. It is not clear what this allowable rate of corrosion is attempting to maintain. Question: Is it to ensure adequate drywell thickness for one additional operating cycle, until the next scheduled ultrasonic testing (UT) inspection at the specified location (more than one additional cycle), or is it validation to the end of the period of extended operation (2029)?	UT is performed for the upper drywell cylinder every other refueling outage [Safety Evaluation Report (SER) Appendix A, Commitment 27, Item 7]. These UT measurements are part of an aging management program (AMP) for the drywell that provides the data to calculate corrosion rates, which are used to determine inspection frequencies. The corrosion rates, measured shell thicknesses, and acceptance criteria for the shell thicknesses determine when the next UT measurements should be taken. This helps to ensure that enough margin exists to reach the next inspection interval. If a corrosion rate in the lower sphere region or the knuckle region is greater than in the areas monitored in the upper drywell, the licensee will perform UT inspections in the transition area at the same frequency as those in the upper drywell [SER Appendix A, Commitment 27, Items 10 and 11].

Enclosure

2	Drywell Corrosion —Embedded Portion (SER pages 1-10 and 4-51 and following)	The last sentence of the first paragraph on page 1-10 states, “only limited corrosion is anticipated for the embedded shell.” Question: How much corrosion is anticipated, and how much has already occurred?	Because of the high pH level of the concrete environment and the lack of oxygen during normal operations, little if any corrosion is anticipated. Visual and UT inspections of the shell within the trenches will continue to be performed at every refueling outage [SER Appendix A, Commitment 27, Item 20]. Visual inspections to check for the presence of water are performed during refueling outages. A license condition will require U.S. Nuclear Regulatory Commission (NRC) review and approval for any changes to the existing trenches.
3	Drywell Corrosion —Peak Loss-of-Coolant Accident Pressure (SER pages 1-12 and 4-64)	AmerGen, in the first bullet states that conservatism in “the assumed peak pressure during the loss-of-coolant accident (LOCA) condition…provide[s] additional structural margin.” Question: Is the NRC’s evaluation/ conclusion (page 4-64) of the drywell’s adequacy based upon the LOCA design pressure specified in the current technical specifications for Oyster Creek (44 psig) or on some other unreviewed “less conservative” value?	The staff’s review of the license renewal application (LRA) used the technical specification value of 44 psig. See SER Section 4.7.2.1, “Summary of Technical Information in the Application.”

4	License Conditions (SER page 1-15, Section 1.7)	Section 1.7 specifies three proposed license conditions. It is New Jersey's understanding that the "additional conditions" already specified in the current Facility Operating License (FOL) DPR-16 will be maintained in their entirety and will not be changed or modified should an extended operating period be granted. If this is correct, it should be so stated in this SER. Additionally, other existing FOL requirements should likewise remain in effect (FOL Sections 1, 2, and 3; Section 4 would change only to the extent of the new end date for the license). This should be addressed in the SER.	If the NRC approves an application for a renewed license, it would issue a new operating license that incorporates the requirements from the previous operating license and any new license conditions identified by the staff's review of the LRA. As a result of the staff's review of the Oyster Creek LRA, the staff has identified seven additional license conditions to be incorporated in the license. SER Section 1.7, "Summary of Proposed License Conditions," provides a summary description of proposed license conditions.

5	Intake Canal (SER page 2-166)	SER page 2-166 includes in scope earthen water control structures (intake canals, embankments). It is stated on this page that "the canal banks are lined with asphalt bonded stone for protection against erosion." The credit being taken for the asphalt top coating seems suspect based upon this recent occurrence. During recent (September 2006) heavy rains at Oyster Creek, the intake canal embankments were undermined (sand under the asphalt coating washed away) and collapsed in several places. This should be addressed in the SER.	Oyster Creek has performed a license renewal inspection – Intake Structural Monitoring – that involved cleaning the south side of the intake structure and performing a visual inspection with divers. The inspection found no indication of structural damage. The NRC resident inspectors did not review AmerGen's inspection results; however, they did review all the corrective action program condition reports and did not identify any issues related to these activities [Inspection Report 05000219/2006005, p.18]. The NRC resident and regional inspectors will continue to review and evaluate the applicant's corrective action program during the period of extended operations and will inspect the implementation of AMPs. SER Section 3.0.3.2.25 describes the staff's review of the water intake structure. In addition, SER Sections 3.0.3.2.25 and 3.5.2 describe the System Monitoring Program operating experience. In the SER, the staff concluded that the enhancements to the System Monitoring Program will adequately manage the aging effects identified in the LRA. The applicant has also committed to perform baseline inspections before entering the period of extended operations, a second inspection 6 years later, and a third inspection 8 years after the second inspection. In addition, the applicant has committed to perform an evaluation after each inspection [SER Appendix A, Commitment 31, Item 17].

6	Control Rod Drive (CRD) Housing Rolled Repair (SER page 3-74)	What is the status of the American Society of Mechanical Engineers (ASME) Code Case and/or the permanent repair plan? This action should be an LRA commitment.	The applicant committed to rolling of the CRD stub tubes as a permanent repair once the NRC endorses ASME Code Case 730 [SER Appendix A, Commitment 9, Item 3]. If the NRC does not endorse the Code Case, the applicant will need to develop a permanent ASME Code repair plan in accordance with BWRVIP-58-A, which has been approved by the NRC, or an alternate ASME code repair plan that would be submitted for NRC approval before the period of extended operation.
7	Core Spray Sparger (SER pages 3-66, 3-68, and 3-77)	Oyster Creek's FOL, paragraph 2.C(5), requires as a specific license condition that inspections of core spray spargers, piping, and associated components will be performed in accordance with BWRVIP-18. Should a change to BWRVIP-18-A be required by NRC staff as a basis for approval, a license change must be submitted by the applicant and approved by the NRC prior to implementation and extended operation. No discussion of how this license condition would be met could be found in the NRC's SER evaluation.	The applicant's AMP complies with the recommendations of BWRVIP-18 issued by General Electric. The staff's review of the AMP for the core spray system found the AMP consistent with the guidelines specified in the staff-approved BWRVIP-18-A report and GALL AMP XI.M9. If the NRC grants a renewed license, the existing license condition (BWRVIP-18) will remain in effect for the remainder of the original 40-year license. Licensee must comply with BWRVIP-18-A during the period of extended operation.

8	Water Leakage from the Refueling Cavity (SER pages 3-119 to 3-122)	Use of strippable coating was not implemented by Oyster Creek. A detailed discussion of this event and possible consequences should be in the SER. On what basis can the NRC approve of the drywell leakage prevention measures when earlier commitments have not been kept? How will NRC document Exelon's past performance and correct the misleading statements made by the licensee to the NRC on the record?	The staff determines whether an AMP is adequate to manage the effects of aging for which it is credited. The staff reaches its conclusion by verifying that the applicant's AMP is consistent with the associated Generic Aging Lessons Learned (GALL) AMP or the 10 elements of an AMP as defined in NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 1, page A.1.8. The staff also uses past operating experience in its determinations. In addition, the applicant has committed to applying a strippable coating during refueling operations and to monitoring for seal leakage daily during refueling [SER Appendix A, Commitment 27, Items 2 and 3]. The NRC inspection report issued on January 17, 2007, discussed this issue in detail and stated that the inspection identified no findings of significance. The inspection report further states that the licensee met its commitment to apply a strippable coating to the reactor cavity liner before the beginning of the October 2006 refueling outage [Inspection Report 05000219/2006013, pages 3, 4, and 6].

9	Metal Fatigue—Cumulative Usage Factor (CUF) (SER pages 3-162, 3-163, 4-20, 4-21, and 4-22)	Oyster Creek has changed the CUF allowable for metal fatigue of the reactor coolant pressure boundary from 0.8 to 1.0. DEP requests that appropriate NRC staff perform the review of this change as part of this SER. Oyster Creek has not utilized the expertise of the original designer of Oyster Creek and has not obtained NRC review and approval of the bases for the change. NRC staff review of the supporting bases for these changes is a necessary part of this SER.	As stated in SER Section 4.3.1, "Reactor Vessel Fatigue Analysis," the staff reviewed the LRA, requested additional information from the applicant, and concluded that the applicant had demonstrated that for the reactor vessel fatigue time-limited aging analysis, the effects of aging on the intended function(s) will be adequately managed for the period of extended operation. The cognizant staff for this technical area reviewed the applicant's evaluation for this change pursuant to Title 10, Section 50.59, "Changes, Tests, and Experiments," of the *Code of Federal Regulations* (10 CFR 50.59) and concluded that it was acceptable. The staff determined that the applicant had modified its reactor vessel fatigue analysis such that the analysis is in accordance with staff-approved ASME Code design criteria including use of a finite element model.
10	Turbine Building Crane (SER page 4-40)	The SER is not clear as to whether the modification to the Turbine Building Crane has been installed. Initiating a modification is no guarantee that the modification will ever be made. This needs to be clarified in the SER, and a commitment to upgrade the crane should be included. Additionally, a commitment by NRC to inspect the upgraded crane should be added.	The modification to the Turbine Building Crane is not related to license renewal since the modification will involve active components and will not change any of the elements of the AMP. AmerGen has informed the NRC staff that the modifications to the turbine building crane will be completed before the period of extended operation.

11	Forked River Combustion Turbines (FRCT)	The agreement between AmerGen and FirstEnergy to ensure successful oversight and operation of the FRCTs during the license renewal period is not in place. The resolution of this issue should be an open license renewal commitment.	SER Appendix A, Commitments 43, 51 through 60, and 65, describe the commitments associated with the FRCT. The NRC will conduct an inspection in accordance with NRC Inspection Procedure 71003, "Post-Approval Site Inspection for License Renewal," to verify that license renewal commitments are properly implemented before and during the period of extended operations.
12	Drywell Containment Metal Vessel	This remains an open item issue pending the containment vessel inspection being conducted during the current Oyster Creek outage. We reserve comment on this issue pending the results of the inspections being performed this current outage. The results of the Sandia analysis should be made publicly available before the license renewal application is approved.	The staff has issued its final SER, dated March 30, 2007, which contains the resolution and closure of the open items related to the drywell shell in Section 1.5, "Summary of Open Items," and Section 4.7.2, "Drywell Corrosion." This SER is publicly available under Agencywide Documents Access and Management System (ADAMS) Accession No. ML070890637. The Sandia report, "Structural Integrity Analysis of the Degraded Drywell Containment at the Oyster Creek Nuclear Generating Station," issued on January 12, 2007, is publicly available (ADAMS Accession No. ML070120395). The report confirmed staff conclusions related to drywell shell integrity.

13	NRC Draft SER Appendix B: Chronology	The NRC does not have an Oyster Creek license renewal file. The chronology that is included in the draft SER is the opportunity to provide a complete and thorough docket for this process since none exists. Revise the list to include all documents that concern Oyster Creek license renewal.	The documents associated with the staff's safety review of the Oyster Creek LRA are identified in two main reports—the SER Appendix C, "Chronology," and the NRC audit report (ADAMS Accession No. ML062280051) (and the associated database). The NRC maintains in ADAMS all documents that concern the license renewal for Oyster Creek. Appendix C to NUREG-1437, Supplement 28, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Oyster Creek Nuclear Generating Station (NUREG-1437, Supplement 28) Final Report," contains a chronology of correspondence concerning the staff's environmental review. These documents are also available in ADAMS.
14	Missing Documents	The application makes use of technical position papers that are not referenced nor included in the LRA. The NRC should request AmerGen to make these documents publicly available.	The staff routinely inspects and audits onsite technical position papers, operating procedures, maintenance procedures, engineering analyses, and program descriptions, which are not docketed. These can include sensitive or proprietary documents, which are not publicly available. The licensee is required to maintain documents in accordance with 10 CFR 50.71, "Maintenance of Records, Making of Reports," and 10 CFR 54.37, "Additional Records and Recordkeeping Requirements."

15	Spent Fuel Dry Storage	Without the local approval for more canisters, the spent fuel pool will soon become filled. Continued operation of the plant should be conditioned upon the capacity for a full core offload. That, in turn, would be predicated upon obtaining additional dry cask storage capacity.	The adequacy of spent fuel storage capacity is handled as a current operating issue and is not within the scope of license renewal as defined by 10 CFR 54.4.
16	Decommissioning of the Back Site	The NRC Final Site Survey, with assistance from the NJ DEP, was completed and approved, but the property has not been officially decommissioned by the NRC. This issue will remain open until the back site is officially decommissioned.	Decommissioning of the back site is outside the scope of license renewal as described in the statement of consideration (60 FN 22461), dated May 8, 1995, and 10 CFR Part 54. It does not pertain to managing the effects of aging of certain structures, systems, and components during the period of extended operation.
17	License Renewal Conditions	This will be the first time that a nuclear power plant operating in the United States will operate beyond 40 years. The license renewal approval should be provisional until it is determined that the open commitments were accomplished and implemented successfully.	If the NRC grants a renewed license, it will conduct an inspection in accordance with NRC Inspection Procedure 71003, “Post-Approval Site Inspection for License Renewal,” to verify that license renewal commitments are properly implemented before and during the period of extended operations.

18	Augmented Off-Gas System	This system has had a poor history of operation. NJ's current review and assessment of the augmented off-gas system is that AmerGen is making necessary improvements for extended operation. The planned modifications should be included in the open commitment list.	The staff evaluation of the augmented Off-Gas System appears in SER Section 3.0.3.2.28, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 EQ Requirements Used in Instrument Circuits" (page 3-168). SER Appendix A, Commitment 35, Item 1, "A review of the Reactor Building High Radiation Monitoring and Air Ejector Offgas Radiation Monitoring system calibration results for cable aging degradation before the period of extended operation and every 10 years thereafter," contains a commitment to enhance the off-gas system. The NRC will conduct an inspection in accordance with NRC Inspection Procedure 71003, "Post-Approval Site Inspection for License Renewal," to verify that license renewal commitments are properly implemented before and during the period of extended operations.
19	Visual Testing	NRC NUREG/CR-6860, "An Assessment of Visual Testing," concluded that visual testing may not be reliable. Since some of the open commitments rely upon visual testing, can you please provide more current information that addresses this concern?	The staff reviewed the applicant's AMPs that include visual inspections and determined that the programs are consistent with or meet the 10 elements of an AMP as defined in the GALL Report. The staff also uses past operating experience to make its determinations. Many visual examinations are also augmented with ultrasonic examinations.

20	Water Intake Structure	The water intake structure was in need of physical improvements because of operational weaknesses. The NRC should inspect the AmerGen inspection during the current outage to determine if the water intake modifications prepare the plant for long-term operation.	Oyster Creek performed a license renewal inspection - Intake Structural Monitoring - which involved cleaning the south side of the intake structure and performing a visual inspection with divers. The inspection found no indication of structural damage. The NRC resident inspectors did not review AmerGen's inspection results; however, they did review all the corrective action program condition reports and did not identify any issues related to these activities [Inspection Report 05000219/2006005, p.18]. The NRC resident and regional inspectors will continue to review and evaluate the applicant's corrective action program during the period of extended operations and will inspect the implementation of AMPs. SER Section 3.0.3.2.25 contains the staff's review of the water intake structure. In addition, SER Sections 3.0.3.2.25 and 3.5.2 describe the staff's evaluation of the System Monitoring Program operating experience. In the SER, the staff concluded that the enhancements to the System Monitoring Program will adequately manage the aging effects identified in the LRA. In addition, the applicant has committed to perform baseline inspections before entering the period of extended operations, a second inspection 6 years later, and a third inspection 8 years after the second inspection. The applicant has also committed to perform an evaluation after each inspection [SER Appendix A, Commitment 31, Item 17].

21	Reactor Vessel Core Shroud	NJ staff reviewed the reactor vessel core shroud AMP, and sufficient assurance has been provided that the reactor vessel core shroud will perform its intended function.	No action requested.
22	Underground Piping	NJ staff reviewed the underground piping AMP, and sufficient assurance has been provided that the underground piping aging management program should identify leaks during life extension.	No action requested.
23	Standard Technical Specifications	NJ staff supported the alignment of the technical specifications with the nationally approved standard technical specifications. Although NJ supports conversion to the standard technical specifications, it is not necessary for continued operation.	No action requested.

Letter to J. Lipoti, from D. Ashley, dated June 22, 2007

SUBJECT: RESPONSE TO COMMENTS CONCERNING THE SAFETY EVALUATION REPORT WITH OPEN ITEMS RELATED TO THE LICENSE RENEWAL OF OYSTER CREEK GENERATING STATION, AUGUST 2006

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