

10 CFR 50.55a

2130-06-20355  
June 23, 2006

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Oyster Creek Generating Station  
Facility License No. DPR-16  
Docket No. 50-219

Subject: Response to Request for Additional Information - Proposed Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel

- References:
- 1) AmerGen letter 2130-00-20300 dated November 10, 2000, "Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"
  - 2) AmerGen letter 2130-00-20304 dated November 14, 2000, "Modification to Proposed Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"
  - 3) USNRC letter dated November 16, 2000, "Request to Use an Alternative Repair of the Control Rod Drive Housing Interface with the Reactor Vessel at the Oyster Creek Nuclear Generating Station (TAC NO. MB0461)"
  - 4) AmerGen letter 2130-01-20031 dated January 19, 2001, "Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel -Clarification of Leakage Inspection"
  - 5) USNRC letter dated January 8, 2002, "Oyster Creek Nuclear Generating Station – Clarification of Leakage Inspection (TAC NO. MB1065)"
  - 6) AmerGen letter 2130-02-20214 dated July 26, 2002, "Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"
  - 7) AmerGen letter 2130-02-20291 dated October 4, 2002, "Additional Information - Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel (TAC No. MB5700)"
  - 8) USNRC letter dated October 18, 2002, "Oyster Creek Nuclear Generating Station - Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel (TAC NO. MB5700)"
  - 9) AmerGen letter 2130-03-20271 dated October 21, 2003, "Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"
  - 10) AmerGen letter 2130-04-20157 dated July 20, 2004, "Response to Request for Additional Information Concerning Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"
  - 11) AmerGen letter 2130-04-20201 dated August 23, 2004, "Response to Request for Additional Information Concerning Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"


- 12) AmerGen letter 2130-04-20214 dated September 8, 2004, "Response to Request for Additional Information Concerning Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel"
- 13) USNRC letter dated November 12, 2004, "Oyster Creek Nuclear Generating Station - Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel (TAC NO. MC1099)"
- 14) AmerGen letter 2130-06-20297 dated March 31, 2006, "Proposed Alternative Repair of Control Rod Drive Housing Interface with Reactor Vessel – Draft Code Case N-730, "Roll-Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in BWRs, Section XI, Division 1" "

In the Reference 14 letter, Oyster Creek Generating Station (OCGS) requested a proposed alternative to the requirements of ASME Section XI, 1995 Edition through 1996 Addenda, IWA-4000, "Repair/Replacement Activities", for the repair of CRD housing penetrations 42-43 and 46-39. Specifically, OCGS proposes the use of Draft Code Case N-730, "Roll-Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in BWRs, Section XI, Division 1". Additionally, OCGS requested approval of the code case as an alternative repair for any additional penetrations that may exhibit leakage for the remainder of the Oyster Creek Generating Station Fourth Ten-Year Inservice Inspection Interval.

By e-mail from G. E. Miller (NRC) to T. Loomis (AmerGen) dated May 25, 2006, the NRC requested additional information. Attached is our response to the NRC staff's request for additional information. This response was discussed with the NRC staff on June 15, 2006. As part of that discussion, the second question was no longer deemed necessary for response.

If you should have any questions, please contact Mr. Tom Loomis at 610-765-5510.

Very truly yours,

*gpk* 

Pamela B. Cowan  
Director – Licensing & Regulatory Affairs  
AmerGen Energy Company, LLC

Attachment: 1) Response to Request for Additional Information

cc: S. J. Collins, USNRC, Administrator, Region I  
G. E. Miller, USNRC, Project Manager, Oyster Creek  
M. S. Ferdas, USNRC, Senior Resident Inspector, Oyster Creek  
File No. 06028

**ATTACHMENT 1**

**Oyster Creek Generating Station**

**Response to Request for Additional Information**

## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

### Question:

1. In your submittal, you requested relief from certain ASME Code requirements on the repair of control rod drive (CRD) housing penetrations 42-43 and 46-39 for the fourth ten-year interval at Oyster Creek Generating Station, proposing draft Code Case N-730, "Roll-Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in BWRs" as an alternative. Please provide information demonstrating that the repair of CRD housing penetrations 42-43 and 46-39 meets the requirements of the draft Code Case.

### Response:

Table 1 provides a comparison of the Code Case N-730 requirements and the repair of CRD housing penetrations 42-43 and 46-39, which was performed in the Fall 2000 refueling outage and identifies the deviations from the Code Case N-730. As discussed in this table, in the event of an additional repair to a control rod drive housing, Code Case N-730 requirements would be followed.

**TABLE 1**  
**Roll Expansion N-730 Requirements vs. Current Roll Requirements**

Item / Area	Code Case Requirement	Deviation	Justification
Roll Band Length	"General Requirements", item 2.1 (b) - Determine minimum roll band length (L) using formula provided in the code case. An additional requirement is that the roll band length shall not exceed six (6) inches.	The roll repair of the two (2) drives was performed in Fall 2000. This formula was not considered as part of the acceptance criteria for the initial roll repair. The pre-qualified length of three (3) inches (minimum) was used.	The roll band length requirement was not in effect at the time of the repair. The pre-qualified length of three (3) inches (minimum) was used and deemed to be acceptable and is based on the requirements of BWRVIP-17. The actual roll length was four (4) inches.  This deviation does not impact the structural integrity or quality of the repair.
Personnel Qualification Requirements	"Performance Demonstration", item 4.0 (b) - Personnel performing tasks for roll expansion shall perform the same tasks in the performance demonstration and is only qualified for 12 months.	Repairs for the two (2) drives were not performed by Oyster Creek personnel, nor was this requirement in existence at that time. Personnel qualifications for the individuals performing the repairs are not available.	This personnel qualification will be followed for future roll expansions. No leakage has been identified from the two (2) repaired drives, which would indicate that personnel qualifications did not negatively impact the quality of the repair.  This deviation does not impact the structural integrity or quality of the repair.
Analysis	"Evaluation", items 5.2 and 5.3 - An evaluation shall be performed for each roll expansion to demonstrate acceptability of the proposed expansion as follows:  5.2 Analysis shall be performed to evaluate crack growth, considering stress corrosion cracking and fatigue. Location and extent of cracking shall satisfy the requirements of IWB-3600.	5.2 Plant specific analysis was not performed.	5.2 This analysis is not required by Oyster Creek at this time because we have not identified or characterized the crack that has caused the leakage. However, the Code Case N-730 Technical Basis Report, "Technical Basis for ASME Code Case N-730 Roll-Expansion of Class 1 Control Rod Drive (CRD) Bottom Head

**TABLE 1**  
**Roll Expansion N-730 Requirements vs. Current Roll Requirements**

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	5.3 If the source of the leakage is a crack in the vessel attachment weld, a postulated axial crack in the vessel attachment weld shall be evaluated. The evaluation shall include an assumption that the entire weld is cracked radially and shall satisfy the requirements of IWB-3600.	5.3 Plant specific analysis was not performed.	<p>Penetrations in BWRs, Section XI, Division 1", Report XGEN-2005-10, Revision 2, March 2006, provides a generic Fracture Mechanics Evaluation of a Postulated Crack in the Attachment Weld in Appendix A.</p> <p>5.3 This analysis is not required by Oyster Creek at this time because we have not identified or characterized the crack that has caused the leakage. However, the Code Case N-730 Technical Basis Report, "Technical Basis for ASME Code Case N-730 Roll-Expansion of Class 1 Control Rod Drive (CRD) Bottom Head Penetrations in BWRs, Section XI, Division 1", Report XGEN-2005-10, Revision 2, March 2006, provides a generic Fracture Mechanics Evaluation of a Postulated Crack in the Attachment Weld in Appendix A.</p>
NDE During Roll Repair	<p>"Examination and Tests", item 6.4 – The UT procedure shall be demonstrated on plant specific mockup that meets Appendix I (of code case N-730) requirements.</p> <p>"Inservice Inspections", item 7.4 – The UT procedure used in the examinations shall be demonstrated on a plant-specific mockup with flaws located in areas of interest, in accordance with Appendix I of this Case.</p>	A plant specific mockup built in accordance with Appendix I was not available during the original repair.	Appendix I (of code case N-730) refers to procedure demonstration utilizing, in part, ASME Section XI, Appendix VIII, Supplement 2. Supplement 2 was not implemented at the time of the original repair. A plant specific mockup will be available in the event that additional roll repairs are necessary that will comply with the Appendix I requirements. As discussed in the proposed relief request, an ultrasonic exam of the inside diameter of CRD housing 46-39 was performed in the R20 outage (Fall 2004). No indications were identified. As discussed in the Reference 10

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			<p>letter, OCGS has been visually inspecting the two (2) roll repairs each time access is gained to under the vessel, which may include forced outage conditions. To date, no additional leakage has been identified with these CRD housings. Draft Code Case N-730 permits no leakage from a roll expanded CRD housing.</p> <p>This deviation does not impact the structural integrity or quality of the repair.</p> <p>In the event of an additional repair to a control rod drive housing, Code Case N-730 requirements would be followed.</p>