

RS-10-014

January 28, 2010

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
Rockville, MD 20852

Oyster Creek Nuclear Generating Station  
Renewed Facility Operating License No. DPR-16  
NRC Docket No. 50-219

**Subject:** Response to Request for Additional Information Regarding Generic Letter 2008-01

- References:**
1. NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008
  2. Letter from K. R. Jury (Exelon Generation Company, LLC/AmerGen Energy Company, LLC) to U.S. NRC, "Three Month Response to Generic Letter 2008-01," dated April 11, 2008
  3. Letter from K. R. Jury (Exelon Generation Company, LLC/AmerGen Energy Company, LLC) to U.S. NRC, "Nine-Month Response to Generic Letter 2008-01," dated October 14, 2008
  4. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U.S. NRC, "Supplemental Response to Generic Letter 2008-01," dated January 20, 2009
  5. Letter from G. E. Miller (U.S. NRC) to C. G. Pardee (Exelon Generation Company, LLC), "Oyster Creek Nuclear Generating Station – Request for Additional Information Regarding Response to Generic Letter 2008-01, 'Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems,' (TAC No. MD7855)," dated December 16, 2009

The NRC issued Generic Letter (GL) 2008-01 (i.e., Reference 1) to request that each licensee evaluate the licensing basis, design, testing, and corrective action programs for the Emergency

Core Cooling, Decay Heat Removal, and Containment Spray systems, to ensure that gas accumulation is maintained less than the amount that challenges operability of these systems, and that appropriate action is taken when conditions adverse to quality are identified.

References 2, 3, and 4 provided the Exelon Generation Company, LLC (EGC) response to NRC GL 2008-01 for Oyster Creek Nuclear Generating Station (OCNGS). In Reference 5, the NRC requested additional information that is required to complete the review. In response to this request, EGC is providing the attached information.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of January 2010.

Respectfully,

  
Patrick R. Simpson  
Manager – Licensing

Attachment: Response to Request for Additional Information

cc: NRC Regional Administrator – Region I  
Senior Resident Inspector – Oyster Creek Nuclear Generating Station

**ATTACHMENT**  
**Response to Request for Additional Information**

**NRC Request 1**

In Reference 4 [Reference 1 in this letter], Exelon states that "the impact of the voids on system operability is evaluated on a case-by-case basis, with acceptable void volumes being determined as part of the evaluation." Please provide a description of your void volume determination methods and how said voids will be quantified and recorded. Additionally, please provide a comparison of your method against the criteria given in Reference 5 [Reference 2 in this letter].

**Response**

Void volumes in piping systems are determined using ultrasonic testing (UT) techniques. Issue Reports (IRs) are initiated in the Corrective Action Program (CAP) when gas accumulation issues are identified. Consistent with the NRC position documented in Reference 3, when voids are discovered in piping, Exelon Generation Company, LLC (EGC) determines through the operability determination process whether there is a reasonable expectation that the system in question will perform its specified safety function.

EGC has actively participated in the Nuclear Energy Institute (NEI) Gas Accumulation Team, and the respective pressurized water reactor and boiling water reactor owners' groups, activities focused on developing suitable guidance for licensees in the evaluation of voids in the piping systems. These groups have engaged recognized industry experts and Nuclear Steam Supply System vendors to determine the most appropriate criteria applicable to current reactor designs. The assessment of voids on the suction side, through the pump, on the discharge side, and the effects on downstream piping and the reactor has been considered. The criteria are documented in eight separate reports generated to support this effort, all of which have been made available to the NRC.

Reference 4 was submitted to the NRC to summarize and focus these separate industry efforts. The enclosure to Reference 4 references these industry documents and provides insight on their application to evaluate operability. This industry guidance is being used by EGC until such time that the NRC criteria can be formally issued and evaluated.

**NRC Request 2**

In Reference 4 [Reference 1 in this letter], Exelon states that "the evaluation process includes consideration of the impact that the void could have on pump operation, water hammer pressure transients, ..." Please describe the monitoring of pump operation in all modes and specialized monitoring of appropriate plant parameters during shutdown operation, including reduced inventory and mid-loop operation.

**Response**

Suitable administrative measures (i.e., clearance and tagging) combined with existing system operating procedures and routine performance monitoring conducted by plant operations personnel adequately ensure that the systems are verified to be sufficiently full prior to their restoration and return to service. The pumps of the subject systems are monitored from the

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control room. They are routinely observed during pump start locally and monitored locally on operators' rounds. The indications include flow rate, discharge pressure, and vibration. During shutdown operations these indications could be monitored. The Generic Letter (GL) 2008-01 (i.e., Reference 5) subject systems do not operate with reduced inventory, or mid-loop operation, during any mode of plant operation. Core Spray and Containment Spray pump net positive suction head (NPSH) during accident mitigation is controlled in accordance with the NPSH curves available in the Emergency Operating Procedures. Deviations from the pump expected performance will result in an IR being initiated in the CAP.

**NRC Request 3**

Clarify the meaning of 'accessible' and 'inaccessible' as used in Reference 4 [Reference 1 in this letter]. Include a discussion of piping within containment, piping that requires scaffolding to reach, and piping in posted radiation areas.

**Response**

The "inaccessible piping sections" refers to the piping of the GL 2008-01 (i.e., Reference 5) subject systems (i.e., Core Spray, Containment Spray, Isolation Condenser, and Shutdown Cooling) located inside the drywell. The walk down of this piping was completed during the fall 2008 refueling outage and focused on verifying that the as-built piping configuration was consistent with the system piping and instrument drawings (P&IDs) and piping isometric drawings, and visually ascertaining if there were areas that have the potential of enabling water hammer transients due to gas accumulation.

**NRC Request 4**

In Reference 4 [Reference 1 in this letter], Exelon states that its review of system design and operating practices concluded that the systems are adequately monitored and tested for potential gas intrusion mechanisms. Provide additional details regarding measures to guard against gas intrusion because of inadvertent draining, system realignments, incorrect maintenance procedures, or other evolutions.

**Response**

EGC relies on a competent, trained, qualified, and attentive staff to continuously monitor, assess, and control system configuration. Upon recognition of a human performance error or equipment failure, IRs are initiated in the CAP and evaluated on a case by case basis.

**NRC Request 5**

Provide a brief description of actions that will be taken if surveillance criteria are not met. Include any post-surveillance activities, such as gas volume trending and procedural checks, used in response to the failure to meet void acceptance criteria.

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**Response**

Procedural controls require IRs to be initiated in the CAP if testing acceptance criteria are not met. The tested system is declared inoperable and the cause of its noncompliance is evaluated to determine appropriate corrective actions. UT inspections may be used if gas accumulation is suspected to be the cause. Failure to meet the existing UT inspection void criteria will require further evaluation based on the actual as-found conditions.

**NRC Request 6**

Provide a discussion of the control and revision of work packages due to change in maintenance work scope, including review and reauthorization of the package and any new temporary procedures.

**Response**

Any work package that requires draining of a system within the GL 2008-01 scope has an activity for Operations to drain the system, which is controlled either by procedure or guidance provided within the work order. Verification of complete filling is required when returning the system from a maintenance activity that required draining of any portion of the system. This verification is accomplished, as directed by the system operation procedure, by performing UT measurements on the system high points. The void acceptance criteria also are provided in the same procedure.

**NRC Request 7**

Although training was not explicitly discussed in the GL (Reference 3 [Reference 5 in this letter]), it is considered a necessary part of applying procedures and other activities in addressing the subject issues. Please provide a brief description of the training to be employed.

**Response**

GL 2008-01 did not require discussion of training to satisfy the 10 CFR 50.54(f) request; therefore, none was provided in the GL response for Oyster Creek Nuclear Generating Station. However, when any station procedure is modified, an assessment for training needs and change management is required in accordance with procedure AD-AA-101, "Processing of Procedures and T&RMs." The determination is typically a function of the nature of the change and the perceived impact on the organization. If the assessment concludes training is required, the training is accomplished prior to, or in parallel with, the issuance of the procedure. Preventive maintenance activities which direct the periodic examination of selected piping for the presence of air draw upon pre-existing processes that provide guidance for the UT inspection of piping to verify that it is full of water. Training of personnel performing UT inspections is in accordance with corporate procedure ER-AA-335-001, "Qualification and Certification of Nondestructive Examination (NDE) Personnel."

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EGC is an active participant in the NEI gas Accumulation Team, which is currently directing the Institute of Nuclear Power Operations (INPO) in the development of generic training modules for gas accumulation and management. These training modules target the Engineering, Operations and Maintenance disciplines. Based on the active participation, EGC plans to evaluate these training modules following completion for applicability to EGC, and may conduct training based upon modules tailored to meet EGC's needs.

**References**

1. Letter from K. R. Jury (Exelon Generation Company, LLC/AmerGen Energy Company, LLC) to U.S. NRC, "Nine-Month Response to Generic Letter 2008-01," dated October 14, 2008
2. "Revision 2 to NRC Staff Criteria for Gas Movement in Suction Lines and Pump Response to Gas," ML090900136, dated March 26, 2009
3. Memorandum from L. D. Wert, Jr. (U.S. NRC) to T. B. Blount (U.S. NRC), "Task Interface Agreement – Emergency Core Cooling System (ECCS) Voiding Relative to Compliance with Surveillance Requirements (SR) 3.5.1.1, 3.5.2.3, and 3.5.3.1 (TIA 2008-03)," dated October 21, 2008
4. Letter from J. H. Riley (Nuclear Energy Institute) to W. H. Ruland (U.S. NRC), "Industry Guidance – Evaluation of Unexpected Voids or Gas Identified in Plant ECCS and Other Systems," dated June 18, 2009
5. NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008