

September 8, 2008

Mr. William Levis
President & Chief Nuclear Officer
PSEG Nuclear LLC - N09
Post Office Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION AND SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2 - RE: GENERIC LETTER 2008-01, "MANAGING GAS ACCUMULATION IN EMERGENCY CORE COOLING, DECAY HEAT REMOVAL, AND CONTAINMENT SPRAY SYSTEMS," PROPOSED ALTERNATIVE COURSE OF ACTION (TAC NOS. MD7835, MD7874 AND MD7875)

Dear Mr. Levis:

On January 11, 2008, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072910759). The GL requested licensees to submit information to demonstrate that the emergency core cooling, decay heat removal, and containment spray systems (hereinafter referred to as the "subject systems") are in compliance with the current licensing and design bases and applicable regulatory requirements, and that suitable design, operational, and testing control measures are in place for maintaining this compliance.

In accordance with Section 50.54(f) of Title 10 of the *Code of Federal Regulations* (10 CFR), GL 2008-01 required that each licensee submit the requested information within 9 months of the date of the GL. The GL also stated that if a licensee cannot meet the requested 9-month response date, the licensee is required to provide a response within 3 months of the date of the GL, describing the alternative course of action it proposes to take, including the basis for the acceptability of the proposed alternative course of action.

By two letters dated April 10, 2008 (ADAMS Accession Nos. ML081130672 and ML081130785), PSEG Nuclear LLC (the licensee) submitted 3-month responses to GL 2008-01 for Hope Creek Generating Station (Hope Creek) and Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2, respectively. The NRC staff's assessment of the responses for Hope Creek and Salem is contained in Enclosures 1 and 2, respectively.

The NRC staff reviewed the licensee's proposed alternative course of action and the associated basis for acceptance and concluded that, with the exception of the clarifications and associated requests discussed in Enclosures 1 and 2, they are acceptable. This letter allows the licensee to implement its proposed alternative course of action provided that implementation is consistent with the clarifications and associated requests discussed in Enclosures 1 and 2.

W. Levis

- 2 -

If you have any questions, please contact me (301) 415-1420.

Sincerely,

/ra/

Richard B. Ennis, Senior Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-354, 50-272, and 50-311

Enclosures: As stated

cc w/encl: See next page

W. Levis

- 2 -

If you have any questions, please contact me (301) 415-1420.

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Enclosures: As stated

cc w/encl: See next page

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Hope Creek Generating Station and Salem Nuclear Generating Station, Unit Nos. 1 and 2

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U.S. NUCLEAR REGULATORY COMMISSION

ASSESSMENT OF 3-MONTH RESPONSE

TO GENERIC LETTER 2008-01

HOPE CREEK GENERATING STATION

DOCKET NO. 50-354

Background

On January 11, 2008, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072910759). The GL requested licensees to submit information to demonstrate that the emergency core cooling, decay heat removal, and containment spray systems (hereinafter referred to as the "subject systems") are in compliance with the current licensing and design bases and applicable regulatory requirements, and that suitable design, operational, and testing control measures are in place for maintaining this compliance. Specifically, the GL requested licensees to provide: (1) a description of the results of evaluations that were performed in response to the GL; (2) a description of all corrective actions that the licensee determined were necessary; and (3) a statement regarding which corrective actions were completed, the schedule for completing the remaining corrective actions, and the basis for that schedule.

In accordance with Section 50.54(f) of Title 10 of the *Code of Federal Regulations* (10 CFR), GL 2008-01 required that each licensee submit the requested information within 9 months (hereinafter referred to as the "9-month submittal") of the date of the GL. The GL also stated that if a licensee cannot meet the requested 9-month response date, the licensee is required to provide a response within 3 months (hereinafter referred to as the "3-month submittal") of the date of the GL, describing the alternative course of action it proposes to take, including the basis for the acceptability of the proposed alternative course of action.

Licensee's Proposed Alternative Course of Action

By letter dated April 10, 2008 (ADAMS Accession No. ML081130672), PSEG Nuclear LLC (PSEG or the licensee) submitted a 3-month response to GL 2008-01 for Hope Creek Generating Station (Hope Creek). PSEG stated that the scope of the evaluations to support the response to the GL includes the following systems: (1) residual heat removal (various modes of operation); (2) high pressure core injection; and (3) core spray.

The licensee stated that the evaluations will be performed as requested in the GL, however, not all the evaluations will be completed within the 9-month schedule provided in the GL. Specifically, the licensee stated that it will not be possible to perform walkdowns on portions of these systems before October 11, 2008, since the walkdowns need to be performed during a refueling outage. PSEG indicated that the need to perform the walkdowns during a refueling outage was based on the following: (1) the walkdowns of these systems require entry into areas

of high radiation or inerted atmosphere (less than 4% oxygen inside drywell) during power operations; (2) there are restrictions on removal of insulation from piping during power operations; and (3) erection of scaffolding may be prohibitive for locations over safety-related equipment or if high radiation levels exist in the area of concern.

As an alternative course of action, the licensee plans to complete walkdowns of those areas only accessible during an outage during the next refueling outage, RF15, which is presently scheduled for April 2009. PSEG also stated that all other system walkdowns will be completed during the 9-month timeframe prescribed in the GL (i.e., by October 11, 2008).

Attachment 2 to PSEG's letter dated April 10, 2008, listed the following commitments:

- Complete the detailed walkdowns of inaccessible sections of GL 2008-01 subject systems prior to startup from the next refueling outage.
- Complete the evaluations of GL 2008-01 subject systems within 90 days following the completion of the next refueling outage.

PSEG stated that the alternative course of action is acceptable based on the following:

- Previous surveillance testing performed on GL 2008-01 subject systems and interviews with operations personnel have confirmed that there are currently no gas voiding issues for Hope Creek.
- Pre-existing operating procedures include monthly venting of the GL 2008-01 subject systems to ensure systems are maintained sufficiently filled. No current issues have been identified in the performance of these procedures.
- In-service testing of the GL 2008-01 subject systems is routinely performed and no known issues impacting pump operability have been identified during this testing.
- Hope Creek has improved venting procedures and added vent valves to ensure adequate system venting and filling as part of corrective actions for previous gas accumulation issues.

Based on the above considerations, PSEG stated that it has confidence that the subject systems can perform their required functions. As such, the licensee concluded that completing performance of walkdowns and subsequent evaluations on a portion of the subject systems outside of the requested 9-month timeframe is an acceptable alternative course of action.

NRC Staff Assessment

The NRC staff finds that the licensee's proposed alternative course of action is acceptable, with the exception of the clarifications and associated requests below, based on the above-described operating experience, testing, procedures and corrective actions associated with managing gas accumulation at Hope Creek.

The NRC staff notes that the licensee's submittal dated April 10, 2008, does not clearly indicate the information to be provided in the submittal that is due by October 11, 2008. In addition, although the submittal states that the licensee's evaluations of the inaccessible sections of the subject systems will be completed within 90 days following completion of outage RF15, it is not clear if that is the date the information will be submitted to the NRC. The NRC staff requests that the information to be provided, as requested in the GL, be submitted as follows:

- 1) For the portions of the subject systems that are accessible prior to refueling outage RF15, provide all GL requested information to the NRC by October 11, 2008.
- 2) For the portions of the subject systems that will be accessible during refueling outage RF15, provide all GL requested information to the NRC within 90 days following the completion of the outage.

For each of the two submittals, and consistent with the information requested in the GL, the licensees should provide: (1) a description of the results of evaluations that were performed in response to the GL; (2) a description of all corrective actions that the licensee determined were necessary; and (3) a statement regarding which corrective actions were completed, the schedule for completing the remaining corrective actions, and the basis for that schedule.

The NRC staff noted that the licensee's submittal dated April 10, 2008, did not mention other potential long-term actions that are identified in the GL. For instance, the industry is assessing whether it is necessary to perform pump testing to determine the allowable limits on ingested gas volume in pump suction, as well as the need to develop an analysis capability to adequately predict void movement (entrapped gas) from piping on the suction side of the pumps into the pumps. It is unlikely this industry effort will be complete for the 9-month initial or supplemental submittals. Further, technical specification changes may be necessary to reflect the improved understanding achieved during response to the GL, but these cannot be fully developed for the 9-month initial or supplemental submittals. A Technical Specifications Task Force traveler may provide a generic example that can be adopted by licensees. The NRC staff requests that the licensee address in its 9-month submittal how it plans to track such long-term actions (e.g., Corrective Action Program and/or commitment tracking). The NRC plans to perform follow-up inspections of licensee responses to GL 2008-01 at all plants using a Temporary Instruction inspection procedure.

U.S. NUCLEAR REGULATORY COMMISSION

ASSESSMENT OF 3-MONTH RESPONSE

TO GENERIC LETTER 2008-01

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

Background

On January 11, 2008, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072910759). The GL requested licensees to submit information to demonstrate that the emergency core cooling, decay heat removal, and containment spray systems (hereinafter referred to as the "subject systems") are in compliance with the current licensing and design bases and applicable regulatory requirements, and that suitable design, operational, and testing control measures are in place for maintaining this compliance. Specifically, the GL requested licensees to provide: (1) a description of the results of evaluations that were performed in response to the GL; (2) a description of all corrective actions that the licensee determined were necessary; and (3) a statement regarding which corrective actions were completed, the schedule for completing the remaining corrective actions, and the basis for that schedule.

In accordance with Section 50.54(f) of Title 10 of the *Code of Federal Regulations* (10 CFR), GL 2008-01 required that each licensee submit the requested information within 9 months (hereinafter referred to as the "9-month submittal") of the date of the GL. The GL also stated that if a licensee cannot meet the requested 9-month response date, the licensee is required to provide a response within 3 months (hereinafter referred to as the "3-month submittal") of the date of the GL, describing the alternative course of action it proposes to take, including the basis for the acceptability of the proposed alternative course of action.

Licensee's Proposed Alternative Course of Action

By letter dated April 10, 2008 (ADAMS Accession No. ML081130785), PSEG Nuclear LLC (PSEG or the licensee) submitted a 3-month response to GL 2008-01 for Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2. PSEG stated that the scope of the evaluations to support the response to the GL includes the following systems: (1) residual heat removal (low head safety injection and shutdown cooling portion); (2) chemical volume control (high head safety injection portion); (3) safety injection (intermediate head safety injection); and (4) containment spray.

The licensee stated that the evaluations will be performed as requested in the GL, however, not all the evaluations will be completed within the 9-month schedule provided in the GL. Specifically, the licensee stated that it will not be possible to perform walkdowns on portions of these systems before October 11, 2008, since the walkdowns need to be performed during a

Enclosure 2

refueling outage. PSEG indicated that the need to perform the walkdowns during a refueling outage was based on the following: (1) the walkdowns of these systems require entry into areas of high radiation during power operations; (2) there are restrictions on removal of insulation from piping during power operations; and (3) erection of scaffolding may be prohibitive for locations over safety-related equipment or if high radiation levels exist in the area of concern.

As an alternative course of action, the licensee plans to complete walkdowns of those areas only accessible during an outage during the next refueling outage for the respective units. PSEG also stated that all other system walkdowns will be completed during the 9-month timeframe prescribed in the GL (i.e., by October 11, 2008). For Salem Unit No. 1, the next refueling outage, 1R19, is scheduled to commence in October 2008. For Salem Unit No. 2, the next refueling outage, 2R17, is scheduled to commence in October 2009.

Attachment 2 to PSEG's letter dated April 10, 2008, listed the following commitments for each of the Salem units:

- Complete the detailed walkdowns of inaccessible sections of GL 2008-01 subject systems prior to startup from the next refueling outage.
- Complete the evaluations of GL 2008-01 subject systems within 90 days following the completion of the next refueling outage.

PSEG stated that the alternative course of action is acceptable based on the following:

- Previous surveillance testing performed on GL 2008-01 subject systems and interviews with operations personnel have confirmed that there are currently no gas voiding issues for either of the Salem units.
- Pre-existing operating procedures include monthly venting of the GL 2008-01 subject systems to ensure systems are maintained sufficiently filled. No current issues have been identified in the performance of these procedures.
- In-service testing of the GL 2008-01 subject systems is routinely performed and no known issues impacting pump operability have been identified during this testing.
- The Salem units have improved venting procedures and have added vent valves to ensure adequate system venting and filling as part of corrective actions for previous gas accumulation issues.

Based on the above considerations, PSEG stated that it has confidence that the subject systems can perform their required functions. As such, the licensee concluded that completing performance of walkdowns and subsequent evaluations on a portion of the subject systems outside of the requested 9-month timeframe is an acceptable alternative course of action.

NRC Staff Assessment

The NRC staff finds that the licensee's proposed alternative course of action is acceptable, with the exception of the clarifications and associated requests below, based on the above-described

operating experience, testing, procedures and corrective actions associated with managing gas accumulation at Salem Unit Nos. 1 and 2.

The NRC staff notes that the licensee's submittal dated April 10, 2008, does not clearly indicate the information to be provided in the submittal that is due by October 11, 2008. In addition, although the submittal states that the licensee's evaluations of the inaccessible sections of the subject systems will be completed within 90 days following completion of the respective outages for each unit, it is not clear if those are the dates the information will be submitted to the NRC. The NRC staff requests that the information to be provided, as requested in the GL, be submitted as follows:

- 1) For the portions of the subject systems that are accessible prior to refueling outage 1R19 for Salem Unit No. 1, and refueling outage 2R17 for Salem Unit No. 2, provide all GL requested information to the NRC by October 11, 2008.
- 2) For the portions of the subject systems that will be accessible during refueling outage 1R19 for Salem Unit No. 1, and refueling outage 2R17 for Salem Unit No. 2, provide all GL requested information to the NRC within 90 days following the completion of the respective outage.

For each of the three submittals, and consistent with the information requested in the GL, the licensees should provide: (1) a description of the results of evaluations that were performed in response to the GL; (2) a description of all corrective actions that the licensee determined were necessary; and (3) a statement regarding which corrective actions were completed, the schedule for completing the remaining corrective actions, and the basis for that schedule.

The NRC staff noted that the licensee's submittal dated April 10, 2008, did not mention other potential long-term actions that are identified in the GL. For instance, the industry is assessing whether it is necessary to perform pump testing to determine the allowable limits on ingested gas volume in pump suction, as well as the need to develop an analysis capability to adequately predict void movement (entrapped gas) from piping on the suction side of the pumps into the pumps. It is unlikely this industry effort will be complete for the 9-month initial or supplemental submittals. Further, technical specification changes may be necessary to reflect the improved understanding achieved during response to the GL, but these cannot be fully developed for the 9-month initial or supplemental submittals. A Technical Specifications Task Force traveler may provide a generic example that can be adopted by licensees. The NRC staff requests that the licensee address in its 9-month submittal how it plans to track such long-term actions (e.g., Corrective Action Program and/or commitment tracking). The NRC plans to perform follow-up inspections of licensee responses to GL 2008-01 at all plants using a Temporary Instruction inspection procedure.