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PSEG Nuclear LLC

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING RESPONSE TO NRC BULLETIN 2003-01, POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER REACTORS
SALEM GENERATING STATION UNITS 1 AND 2
DOCKET NOS. 50-272 AND 50-311

Reference: LRN-03-0331, Response to NRC Bulletin 2003-01, Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors, Dated August 6, 2003

In the referenced letter, PSEG Nuclear LLC, (PSEG) submitted our 60-day response to NRC Bulletin 2003-01 for the Salem Nuclear Generating Station, Units 1 and 2. The Nuclear Regulatory Commission (NRC) staff completed its preliminary review of our response and determined that additional information is necessary for completion of the staff's review. On September 10, 2004, the NRC issued a letter to PSEG requesting additional information to be submitted within 45 days of the date of the letter.

Attachment 1 contains PSEG's response to the request for additional information. Attachment 2 contains commitments made in this response.

If you have any questions or require additional information, please contact Mr. Michael Mosier at (856) 339-5434.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Executed on 10/29/2004

Michael Brothers
Vice President – Site Operations

Attachments

A103

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SALEM GENERATING STATION UNIT NOS. 1 AND 2
FACILITY OPERATING LICENSE NOS. DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING NRC BULLETIN 2003-01 POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER REACTORS

By letter dated August 6, 2003, PSEG Nuclear, LLC (PSEG) submitted our 60-day response to NRC Bulletin 2003-01 for the Salem Nuclear Generating Station, Units 1 and 2. Our response addressed interim compensatory measures that have been or will be implemented to reduce the risk which may be associated with the potentially degraded or nonconforming Emergency Core Cooling System (ECCS) and Containment Spray System (CSS) recirculation functions until an evaluation to determine compliance has been completed [Option 2]. The Nuclear Regulatory Commission (NRC) staff has completed its preliminary review of this response and determined that responses to the following questions are necessary for completion of the NRC staff's review.

NRC Question 1

On page 5 of Attachment 1 of our response to Bulletin 2003-01 we stated that:

> The Westinghouse Owners Group (WOG) has committed to evaluate and access actions to delay switchover to containment sump recirculation and provide generic recommendations to utilities by March 31, 2004. After the WOG recommendations are approved and issued, Salem will re-evaluate the need for changes to the EOPs and any supporting analysis or licensing changes that may be required.

The WOG has developed operational guidance in response to Bulletin 2003-01 for Westinghouse and CE type pressurized water reactors. Provide a discussion of your plans to consider implementing this new WOG guidance. Include a discussion of the WOG recommended compensatory measures that have been or will be implemented at your plant, and the evaluations or analyses performed to determine which of the WOG recommended changes are acceptable at your plant. Provide technical justification for those WOG recommended compensatory measures not being implemented by your plant. Also include a detailed discussion of the procedures being modified, the operator training being implemented, and your schedule for implementing these compensatory measures.

PSEG Response to Question 1:

The Westinghouse Owners Group (WOG) has evaluated interim compensatory measures as addressed in NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors, in WCAP-16204, Evaluation of Potential ERG [Emergency Response Guidelines] and EPG [Emergency Procedure Guidelines] Changes to Address NRC Bulletin 2003-01 Recommendations (PA-SEE-0085)". The following is a discussion of the WOG recommended compensatory measures that have been or will be implemented at Salem Units 1 and 2, and the evaluations or analyses performed to determine which of the recommended changes are acceptable. A technical justification for those WOG recommended compensatory measures not being implemented is included. A detailed discussion of the procedures being modified, the operator training being implemented, and the schedule for implementing these compensatory measures is also included.

A. Candidate Operator Actions (COAs) Selected for Implementation

1) COA A1a-W Operator Action to Secure One Spray Pump – Westinghouse Plants

This COA addresses Bulletin 2003-01 Interim Compensatory Measure "procedural modifications, if appropriate, that would delay switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary ...)"

In WCAP-16204, the action to secure one Containment Spray pump prior to initiating containment sump recirculation was evaluated for Westinghouse-designed plants. This action is intended to:

- Reduce the flow rate to the sump when containment recirculation begins,
- Reduce the pressure differential across the emergency sump screen if there is a build up of debris, and
- Provide a modest time delay to the start of containment recirculation during a small break loss of coolant accident (SBLOCA).

The WCAP-16204 evaluation of this action resulted in the following recommendation: "In general, implementation of this step is recommended for plants with containment fan coolers capable of removing significant heat loads."

The CSS and the Containment Fan Coil Units (CFCUs) serve as independent sources of containment cooling to assure that post-accident containment temperature and pressure do not exceed their design basis values. A minimum of three CFCUs in operation with a single Containment Spray train is capable of

maintaining post-accident containment temperature and pressure below their design basis values, assuming a worst-case single active failure.

In addition, the sprays are assumed to remove elemental and particulate iodine only during the spray injection phase of the accident, which terminates at 48 minutes (single train operational). The analysis of iodine removal by Containment Spray water is based on the assumption that one of two spray pumps is operating and one train of ECCS is operating at its maximum capacity. One Containment Spray pump provides sufficient iodine scrubbing capability to ensure that post-accident fission product leakage (based on TID-14844 release fractions) would not result in doses exceeding the limits of 10CFR100.

Salem Emergency Operating Procedure (EOP) 1(2)-EOP-LOCA-3, "Transfer to Cold Leg Recirculation", provides direction to stop one Containment Spray pump early in the recirculation alignment sequence to prolong the time available for the operators to establish the cold leg recirculation alignment before depleting the Refueling Water Storage Tank (RWST) inventory. Salem 1(2)-EOP-LOCA-1, "Loss of Reactor Coolant", provides direction to stop two Containment Spray pumps if containment pressure has been reduced below the spray signal reset pressure (13 psig). Currently, no procedural guidance exists to stop one of two operating Containment Spray pumps earlier in the LOCA recovery.

PSEG will perform an evaluation of actions to stop one of two operating Containment Spray pumps earlier in the LOCA recovery, (Salem 1(2)-EOP-LOCA-1). This evaluation will consider the complete interruption of spray flow due to a failure of the active spray pump, with subsequent operator action to restart a spray pump. Generic analyses detailed in WCAP-16204 determined that, if a spray pump is restarted within 10 minutes after failure of the running pump, containment pressure and temperature will remain below assumed limits for the reference plant. The Salem evaluation will determine if the WCAP-16204 analysis is bounding with regard to containment pressure and temperature values in the plant-specific analysis of record, and will determine if plant-specific dose analysis assumptions can be satisfied with a temporary interruption of spray flow. Additionally, the potential effect of increased operator action time necessary to perform the associated EOP step must be considered. Finally, the potential for increased margin in spray requirements due to the in-progress License Change Request (LCR) for use of full Alternate Source Term (AST) must also be considered.

If the evaluation demonstrates that a temporary interruption of spray flow is acceptable, Salem 1(2)-EOP-LOCA-1 will be revised to include a step to stop a Containment Spray pump, if both pumps are running and an adequate number of CFCUs are operating (based on containment pressure value and trend). These steps will be incorporated into the EOPs consistent with the guidance provided in ERG Maintenance Item DW-03-018, with plant-specific revisions as necessary to

ensure dose analysis assumptions are met. Simulator validation and operator training will be conducted prior to implementation of any resulting EOP change.

Date for Completion of Evaluation: February 11, 2005

Date for Implementation of EOP Change: July 31, 2005

2) COA A5 Refill of Refueling Water Storage Tank

This COA addresses Bulletin 2003-01 Interim Compensatory Measure "Ensure that alternative water sources are available to refill the Refueling Water Storage Tank (RWST) or otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere."

In WCAP-16204, the action to preemptively prepare to refill the RWST, or lineup an alternate makeup source bypassing the RWST, in anticipation of possible sump blockage following the initiation of recirculation was evaluated. This action is intended to provide an additional source of makeup water to the [Reactor Coolant System] RCS in the event recirculation capability is unavailable.

The WCAP-16204 evaluation of this action resulted in the following recommendation: "Implementation of ERG/EPG changes to initiate early action to line up to refill the RWST or bypass it to support using an alternate makeup source, if needed, are generally recommended. Actual refill is not generally recommended until after switchover has occurred."

After the safety injection (SI) switchover to recirculation is complete, one Containment Spray pump remains running until the RWST low-low level is reached. Once the spray pump is stopped, injection into containment from the RWST is terminated.

In order to provide additional assurance that a supply of borated water will be available in the event recirculation capability is unavailable due to sump blockage, Salem will include actions to establish makeup to the RWST in Salem 1(2)-EOP-LOCA-3, "Transfer to Cold Leg Recirculation", after the last operating Containment Spray pump is stopped. Note that injection of this additional water into the RCS or containment will not be directed unless sump recirculation capability is lost. Actions to provide additional makeup flow to the RCS from a borated water source, after loss of recirculation capability due to sump blockage, will be included in a new procedure for response to sump blockage. Development of this procedure is addressed in COA A9-W, "Develop Contingency Actions in Response to: Containment Sump Blockage, Loss of Suction, and Cavitation".

Current guidance provided in Salem 1(2)-EOP-LOCA-5, "Loss of Emergency Recirculation", to refill the RWST after switchover to sump recirculation, if a loss of recirculation capability occurs, and guidance to add makeup to the RWST contained in procedure S1(2).OP-SO.CVC-0006(Q), "Boron Concentration Control", will be used to develop the actions discussed above.

Date for Implementation of EOP Change: February 11, 2005

3) COA A8-W Provide Guidance on Symptoms and Identification of Containment Sump Blockage – Westinghouse Plants

This COA addresses Bulletin 2003-01 Interim Compensatory Measure "operator training on indications of and responses to sump clogging."

In WCAP-16204, an evaluation of available instrumentation to identify symptoms of containment sump blockage or degraded ECCS pump performance was conducted for Westinghouse-designed plants. Use of this instrumentation is intended to enable operators to identify sump blockage, then perform mitigative actions in response to the condition.

The WCAP-16204 evaluation of this action resulted in the following recommendation: "In general the proposed change is advantageous to all/most plants, however each plant must consider the advantages and disadvantages as they apply to their plant specific design and incorporate this action if it is determined to be risk beneficial with respect to containment sump blockage."

Once cold leg recirculation is established, Salem 1(2)-EOP-LOCA-3, "Transfer to Cold Leg Recirculation", directs the operators to implement NC.EP-EP.ZZ-0201(Q), "TSC-Integrated Engineering Response" (EPEP-0201). EPEP-0201 was enhanced to provide additional guidance to the Technical Support Center (TSC) staff to make recommendations to the operators based on their evaluations of data and the possibility of sump blockage. Per EPEP-0201, indications of sump blockage may include the following:

- Erratic Current (amps) indicated on Charging, SI or Residual Heat Removal (RHR) pumps
- Erratic Discharge Pressure indicated on Charging, SI or RHR pumps
- Erratic Flow indicated on Charging, SI or RHR pumps

- Erratic or unexpected containment sump level indication

The specific instrumentation monitored by the control room operators and communicated to the TSC engineers, as discussed in our response to Bulletin 2003-01 includes the following:

- Safety Injection (SI) pump flow (FI-922, FI-918)
- SI pump discharge pressure (PI-923, PI-919)
- SI pump current (IA-5432, IA-5433)
- Containment recirculation sump level (LA-2445)
- RHR (low-head SI) pump flow (FI-946, FI-947)
- RHR (low-head SI) pump discharge pressure (PI-635, PI-647)
- RHR (low-head SI) pump current (IA-5001, IA-5002)
- Charging pump total flow (FI-917)
- Charging pump discharge pressure (PI-942)
- Charging pump current (IA-5310, IA-5311)
- Containment sump level (LA-2445)
- Containment pressure (PI-5511)

Additional training for TSC engineers was conducted to specifically address sump blockage concerns identified in NRC Bulletin 2003-01.

In order to support implementation of a procedure for response to sump blockage (per COA A9-W), steps directing the operator to monitor for indications of sump blockage will be added to Salem 1(2)-EOP-LOCA-3, "Transfer to Cold Leg Recirculation", and Salem 1(2)-EOP-LOCA-5, "Loss of Emergency Recirculation". These steps will be incorporated into the EOPs consistent with the guidance provided in ERG Maintenance Item DW-03-018, including the plant-specific indications listed above. These steps will replace the current direction to implement

EPEP-0201. Simulator validation and operator training will be conducted prior to implementation of any resulting EOP change.

Date for Implementation of EOP Change: July 31, 2005

4) COA A9-W Develop Contingency Actions in Response to: Containment Sump Blockage, Loss of Suction, and Cavitation – Westinghouse-Plants

This COA addresses the NRC Bulletin 2003-01 Interim Compensatory Measure "operator training on indication of and responses to sump clogging."

In WCAP-16204, the feasibility and appropriateness of actions related to responses to sump clogging, loss of suction and cavitation were evaluated. These actions are intended to mitigate the sump blockage condition and provide recovery actions in the form of a generic guideline.

The WCAP-16204 evaluation of these actions resulted in the following recommendation: "In general, the following contingency actions in response to sump blockage were determined to be advantageous:

a. Stop pumps experiencing loss of suction to prevent permanent pump damage

b. Reduce recirculation flow to the minimum required to support design basis or critical safety functions

c. Verify containment cooling unit operation to minimize cooling demand for Containment Spray flow

d. Establish alternate water sources to inject into the reactor core and spray into the containment

e. Optimize use of available sources of flow for injection into the reactor core and spray into the containment

f. Cool-down and depressurize the RCS using the secondary system to reduce required injection flow to the RCS and allow placing the RHR system in service"

These contingency actions have been included in the generic guideline SBCRG, "Sump Blockage Control Room Guideline".

TSC procedure EPEP-0201 was enhanced to provide additional guidance to the TSC staff to mitigate the effects of degraded ECCS pump performance if containment sump blockage is indicated or occurs. These enhancements include

steps that direct the TSC engineers to make recommendations to the operators based on their evaluation of the following:

- Whether one train of ECCS pumps should be shut down
- Whether one train of Containment Spray should be shut down
- Whether RHR flow should be throttled/reduced
- Whether LOCA-5 should be entered if ECCS flow is degraded
- Whether the Chemical Volume Control System (CVCS) positive displacement pump cross-connection should be used in accordance with procedure S1(2).OP-SO.CVC-0023, "CVCS Cross-Connect Alignment to Unit 2(1)"

Training for procedure revisions to EPEP-0201 concerning actions to consider if sump blockage is indicated or occurs was completed.

A new procedure for response to containment sump blockage will be developed, based on the generic guideline SBCRG, "Sump Blockage Control Room Guideline". This procedure will be incorporated into the EOPs consistent with the guidance provided in SBCRG. This procedure will replace the current direction provided in EPEP-0201. Simulator validation and operator training will be conducted prior to implementation of this procedure.

Date for Implementation of Sump Blockage EOP: July 31, 2005

B. Candidate Operator Actions (COAs) Not Selected for Implementation and Justification

1) COA A1b Operator Action to Secure Both Spray Pumps

The WCAP-16204 evaluation of this action resulted in the following recommendation: "Implementation of this step requires effective CFCs [Containment Fan Coolers] and minimal or no requirement for iodine or pH control with spray." "Implementation of this step is only recommended for plants with containment fan coolers that can remove 100% of the decay heat load when spray is stopped and spray is not required for iodine removal or pH control."

A minimum of three Containment Fan Coil Units (CFCUs) in operation with a single Containment Spray train is required to maintain post-accident containment temperature and pressure below their design basis values, assuming a worst-case single active failure. The analysis of iodine removal by Containment Spray water is based on the assumption that one of two spray pumps is operating and one train of ECCS is operating at its maximum capacity.

Salem 1(2)-EOP-LOCA-1, "Loss of Reactor Coolant", currently provides direction to stop two Containment Spray pumps if containment pressure has been reduced below the spray signal reset pressure (13 psig). This action addresses reducing RWST inventory depletion when containment depressurization by spray is no longer required, based on specific criteria for containment pressure. Therefore, PSEG has existing guidance that satisfies this COA and no further actions are required.

2) COA A2 Manually Establish One Train of Containment Sump Recirculation Prior to Automatic Actuation

The WCAP-16204 evaluation of this action resulted in the following recommendation: "As general guidance, implementation of this operator action is recommended only for plants that have margin in their containment sump NPSH calculation, have the ability to secure one injection train, have the ability to secure one or both spray pumps, and can refill the RWST."

Section 6.3.2.6 of the UFSAR, indicates that the operator begins actions to switchover to containment sump recirculation when the RWST reaches the low level setpoint. The water volume available in the containment sump when the RWST low-level setpoint is reached is 207,800 gallons for Unit 1 and 204,500 gallon for Unit 2. The amount of water required in the containment sump to provide adequate NPSH for an RHR pump is 193,000 gallons. Based on conservative assumptions for pump flow rates and the available RWST water volume during the injection phase, the RWST low-level alarm will be reached in 12.9 minutes (Unit 1) and 12.5 minutes (Unit 2).

It is not feasible to establish a train of sump recirculation earlier at Salem based on the small margin between the water volume available in the containment sump when the RWST low level is reached, and the water volume required in the containment sump to support operation of an RHR pump on recirculation. RWST refill will not be initiated until after recirculation is established, (see response for COA A5), so additional RWST volume will not be transferred to the sump before the low level setpoint is reached. Additionally, for an event in which all ECCS pumps and Containment Spray pumps are operating, there is insufficient time available to establish early recirculation alignment without interfering with other necessary operator actions during the recovery. Therefore, this COA will not be implemented.

3) COA A3-W Terminate One Train of Safety Injection After Recirculation Alignment – Westinghouse

The WCAP-16204 evaluation of this action resulted in the following recommendation: "Each plant must consider the advantages and disadvantages as they apply to their plant specific design and incorporate interim compensatory measures that are risk beneficial with respect to containment sump blockage."

Per the single active failure analysis at Salem, one train of SI (one charging pump, one SI pump, one RHR pump) is required during the injection phase and recirculation phase of Safety Injection operation. Action to manually secure one train of SI after recirculation would not be considered a "failure"; therefore, a single failure of the operating SI train would result in an interruption of ECCS flow to the core until the operator could manually restart the SI train previously secured. Since the Salem analysis does not consider an interruption in ECCS flow during a single failure, a reanalysis and potential licensing amendment would be required to implement this COA. Additionally, WCAP-16204 (Appendix B) analyses show that clad surface temperatures would reach unacceptable values if all SI flow is stopped for approximately 10 minutes and is not re-instated within this time frame. This is a very short time for relying on plant operators under stressful conditions to restart the SI flow so as to bring the core temperatures down to acceptable values.

Based on the above discussion, the sump blockage-related benefit associated with terminating one train of SI after recirculation alignment does not outweigh the resulting increased risk associated with core cooling. Therefore, this COA will not be implemented.

4) COA A4 Early Termination of One LPSI/RHR Pump Prior to Recirculation Alignment

The WCAP-16204 evaluation of this action resulted in the following recommendation: "Preliminary indications show that stopping one LPSI [Low Pressure Safety Injection] pump before recirculation may result in core damage and therefore is not risk beneficial."

This evaluation was performed for the Combustion Engineering (CE) designed plants only. In the CE design the low-pressure and high-pressure pumps are independent, and thus a low-pressure pump can be shut down while the high-pressure pump in that train continues to operate. At Salem, the low pressure (RHR) pumps provide suction for the high-pressure SI pumps. Therefore, if an RHR pump is secured and fails to restart for recirculation phase the entire train of SI would be lost. As discussed in COA A3-W, WCAP-16204 analyses shows a risk to core cooling and potential fuel damage if all SI flow is stopped.

This COA is not applicable to the Salem plant design, therefore, it will not be implemented.

5) COA A6 Inject More Than One RWST Volume From a Refilled RWST or by Bypassing the RWST

The WCAP-16204 evaluation of this action resulted in the following recommendation: "This action would only be taken after aligning for recirculation and a subsequent loss of recirculation capability due to sump blockage. This is clearly a beyond design bases situation."

The transfer of greater than one RWST volume to containment is beyond Salem design bases assumptions, and may exceed the containment-flooding limit with the potential for submergence of equipment and instrumentation inside containment that may be required for the recovery. Salem 1(2)-EOP-LOCA-5, "Loss of Emergency Recirculation", provides guidance for establishing makeup to the RCS from an alternate source (via Volume Control Tank (VCT) makeup) and allows for injection of additional water from the RWST. Additionally, Salem has the ability to inject borated water from the opposite unit RWST using a cross-connect line and an opposite unit-charging pump.

Actions to provide additional makeup flow to the RCS from a borated water source, after loss of recirculation capability due to sump blockage, will be included in the new procedure for response to containment sump blockage. This procedure will be based on the generic guideline SBCRG, "Sump Blockage Control Room Guideline"

and is covered by COA A9-W. No further actions associated with COA A6 will be implemented, beyond those specified by COA A9-W.

6) COA A7 Provide More Aggressive Cooldown and Depressurization Following A Small Break LOCA

The WCAP-16204 evaluation of this action resulted in the following recommendation: "It is recommended that the EPG terminology and usage of 'controlled cooldown' and 'rapid cooldown' be clarified and EPG changes incorporated."

This evaluation was performed for the Combustion Engineering (CE) designed plants only. The Westinghouse Emergency Response Guidelines (ERGs) already address maximizing the cooldown rate up to the Technical Specification limit.

The Salem EOPs are based on the ERGs. Salem 1(2)-EOP-LOCA-2 provides guidance to cooldown and depressurize the RCS to reduce break flow, thereby reducing the injection flow necessary to maintain RCS subcooling and inventory. These actions delay depletion of the RWST. The RCS cooldown rate specified in Salem 1(2)-EOP-LOCA-2 is consistent with the Salem Technical Specification limit. Therefore, PSEG has existing guidance that satisfies this COA and no further actions are required.

7) COA A10 Early Termination of One Train of HPSI/High-Head Injection Prior to Recirculation Alignment (RAS)

The WCAP-16204 evaluation of this action resulted in the following recommendation: "Securing one HPSI [High Pressure Safety Injection] pump before transfer to recirculation is not considered risk beneficial due to the risk of core damage upon single failure loss of the one operating HPSI pump during a small break LOCA."

This evaluation was performed for the Combustion Engineering (CE) designed plants only. Additionally, WCAP-16204 (Appendix B) analyses show that clad surface temperatures would reach unacceptable values if all SI flow is shutoff for approximately 10 minutes and is not re-instated within this time frame. For a small break LOCA, high head injection is essentially all SI flow because of the prevailing RCS pressure.

Based on the above discussion, the sump blockage-related benefit associated with this COA does not outweigh the increased risk associated with core cooling. Therefore, this COA will not be implemented.

C. Candidate Operator Actions (COAs) Not Selected for Implementation based upon plant design

WCAP-16204 includes evaluations of seventeen COAs. Six of these seventeen COAs are specifically associated with the Combustion Engineering (CE) plant design, or the ice condenser containment design, and are not applicable to Salem. These COAs are listed below:

1) **COA A1a-CE** — **Operator Action to Secure One Spray Pump – CE**

2) **COA A1a-Ice** — **Operator Action to Secure One Spray Pump – Ice Condenser**

3) **COA A3-CE** — **Terminate One Train of HPSI/High-Head Injection After Recirculation Alignment – CE**

4) **COA A8-CE** — **Provide Guidance on Symptoms and Identification of Containment Sump Blockage – CE**

5) **COA A9-CE** — **Develop Contingency Actions in Response to - Containment Sump Blockage, Loss of Suction, and Cavitation**

6) **COA A11** — **Prevent or Delay Containment Spray for Small Break LOCAs (<1.0 Inch Diameter) in Ice Condenser Plants**

NRC Question 2

NRC Bulletin 2003-01 provides possible interim compensatory measures licensees could consider to reduce risks associated with sump clogging. In addition to those compensatory measures listed in Bulletin 2003-01, licensees may also consider implementing unique or plant-specific compensatory measures, as applicable. On page 9 of Attachment 1 to your Bulletin 2003-01 response, you discussed the design, purpose, and cleaning routine for both the inner and outer annulus drain trenches. Please discuss any other possible unique or plant-specific compensatory measures you considered for implementation at your plant. Include a basis for rejecting any of these additional considered measures.

PSEG Response to Question 2:

The inner and outer annulus drain trenches of Salem Units 1 and 2 represent a unique plant-specific alternate flow path to the ECCS sump and their routine cleaning provides a level of assurance that they will be available post-accident. The trenches are the extent of specific design features, or combination of design features and design-specific practices, that minimize the risk of sump blockage at Salem Units 1 and 2.

The review performed for Bulletin 2003-01 did not formally evaluate any other unique or plant specific measures, due to the Westinghouse Owners Group involvement with evaluating potential EOP changes.

The following commitments are contained in this document:

COA #	Action	Completion Date
A1a-W	1. Complete evaluation 2. Implement EOP change	February 11, 2005 July 31, 2005
A5	1. Implement EOP change	February 11, 2005
A8-W	1. Implement EOP change	July 31, 2005
A9-W	1. Implement EOP change	July 31, 2005