

October 28, 2003

Mr. Roy A. Anderson  
President & Chief Nuclear Officer  
PSEG Nuclear, LLC - X04  
Post Office Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2, ISSUANCE OF  
AMENDMENTS RE: PRESSURE SENSOR RESPONSE TIME TESTING  
REQUIREMENTS (TAC NOS. MB8448 AND MB8449)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment Nos. 260 and 241 to Facility Operating License Nos. DPR-70 and DPR-75 for the Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated April 11, 2003, as supplemented on August 28, and September 22, 2003.

These amendments modify TS Surveillance Requirements (SRs) 4.3.1.1.3 and 4.3.2.1.3 relating to response time testing of the Engineered Safety Features Actuation System and the Reactor Trip System. In addition, the footnote associated with Salem, Unit No. 1, SR 4.3.2.1.3, regarding a one-time extension to the SR, is being deleted by the TS change.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

*/RA/*

Robert J. Fretz, Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosures: 1. Amendment No. 260 to  
License No. DPR-70  
2. Amendment No. 241 to  
License No. DPR-75  
3. Safety Evaluation

cc w/encls: See next page

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ACRS	RFretz	CRaynor	OGC

\*\* See previous concurrence

ACCESSION NUMBER: ML03

\* SE Input provided. No major changes made.

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NAME	RFretz	CRaynor	EMarinos	RHoefling	JClifford
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PSEG NUCLEAR, LLC

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 260  
License No. DPR-70

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by PSEG Nuclear, LLC and Exelon Generation Company, LLC (the licensees) dated April 11, 2003, as supplemented on August 28, and September 22, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in Title 10 of the *Code of Federal Regulations* (10 CFR), Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-70 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 260, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: October 28, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 260

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3/4 3-1  
3/4 3-14  
B 3/4 3-1  
B 3/4 3-1a

Insert Pages

3/4 3-1  
3/4 3-14  
B 3/4 3-1  
B 3/4 3-1a

PSEG NUCLEAR, LLC

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-311

SALEM NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 241  
License No. DPR-75

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by PSEG Nuclear, LLC and Exelon Generation Company, LLC (the licensees) dated April 11, 2003, as supplemented on August 28, and September 22, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in Title 10 of the *Code of Federal Regulations* (10 CFR), Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-75 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 241, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: October 28, 2003



ATTACHMENT TO LICENSE AMENDMENT NO. 241

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3/4 3-1  
3/4 3-14  
B 3/4 3-1  
B 3/4 3-1a

Insert Pages

3/4 3-1  
3/4 3-14  
B 3/4 3-1  
B 3/4 3-1a

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 260 AND 241 TO FACILITY OPERATING  
LICENSE NOS. DPR-70 AND DPR-75  
PSEG NUCLEAR, LLC  
EXELON GENERATION COMPANY, LLC  
SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

By letter dated April 11, 2003, as supplemented on August 28, and September 22, 2003, PSEG Nuclear, LLC (PSEG or the licensee), submitted a request for changes to the Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2, Technical Specifications (TSs). The requested changes would modify TS Surveillance Requirements (SRs) 4.3.1.1.3 and 4.3.2.1.3, and TS Bases Sections B 3/4.3.1 and B 3/4.3.2 relating to response time testing (RTT) of the Engineered Safety Features Actuation System (ESFAS) and the Reactor Trip System (RTS). In addition, the footnote associated with Salem, Unit No. 1, SR 4.3.2.1.3, regarding a one-time extension to the SR, is being deleted by this license amendment. The August 28 and September 22, 2003, letters provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

Most operating nuclear power plants' TSs require licensees to periodically perform RTT for selected instrument channels in the RTS and the ESFAS systems. The intent of these tests is to ensure that changes in the response time of instrumentation beyond the limits assumed in safety analyses are detected and combined with instrument calibrations, to ensure that the instrumentation is operating correctly. The changes proposed by the licensee would afford operational flexibility by eliminating the periodic requirement for RTT of certain components and systems.

The requirement for periodic testing of the RTS is established in Section 50.55a, "Codes and Standards," of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50. Section 50.55a(h)(2) of 10 CFR states that:

[f]or nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, protection systems must meet the requirements stated in either IEEE [Institute of Electrical and Electronics Engineers] Std. 279,

“Criteria for Protection Systems for Nuclear Power Generating Stations,” or in IEEE Std. 603-1991, “Criteria for Safety Systems for Nuclear Power Generating Stations,” and the correction sheet dated January 30, 1995.

In addition, 10 CFR 50.36(c)(2)(ii)(A) requires a TS limiting condition for operation for "installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary." Section 50.36(c)(3) of 10 CFR, "Surveillance Requirements," also states that: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within the safety limits, and that the limiting conditions for operation will be met." In 1975, the U.S. Nuclear Regulatory Commission (NRC or the Commission) implemented a program that included RTT as one of the TS SRs for instrumentation important to safety.

The basis for eliminating RTT is contained in IEEE Standard 338, Section 6.3.4, paragraph 3, which states:

Response time testing of all safety-related equipment is not required if, in lieu of response time testing, the response time of the safety equipment is verified by functional testing, calibration checks or other tests or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine periodic tests.

This IEEE standard was endorsed by Regulatory Guide 1.118, “Periodic Testing of Electric Power and Protection Systems.”

In 1991, the Electric Power Research Institute (EPRI) issued a report, NP-7243, “Investigation of Response Time Testing Requirements.” The EPRI report included a failure modes and effects analysis of certain sensors as well as an evaluation of response time test data. The report determined that for these sensors, any failure that will affect the response time characteristic of the sensors will also affect the calibration and other routine surveillance and, therefore, a separate RTT is not required to demonstrate response time assumptions used in the plant’s Final Safety Analysis Report.

In September 1995, the NRC staff approved Westinghouse Owners Group Topical Report WCAP-13632-P, Revision 2, “Elimination of Pressure Sensor Response Time Testing Requirements.” The staff accepted WCAP-13632-P, Revision 2, for reference in license amendment applications for all Westinghouse pressurized water reactors, with specified conditions, in a safety evaluation report (SER) dated September 5, 1995. In January 1996, Westinghouse issued WCAP-13632-P-A, Revision 2, which included the NRC staff’s SER.

### 3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee’s regulatory and technical analyses in support of its proposed license amendment. A detailed evaluation is provided in the following subsections.

### 3.1 TS Changes

The licensee proposed to no longer perform RTT on specific Rosemount 1153, and 1154 sensors serving the RTS and ESFAS systems. These sensor types are listed in the NRC staff's SER dated September 5, 1995, approving WCAP-13632. Since the NRC staff has already reviewed the generic analysis, the NRC staff verified that each of the proposed changes was consistent with WCAP-13632. The applicable sections of the Salem TSs to be changed are as shown below:

#### 3.1.1 TS 3/4.3.1, "Reactor Trip System Instrumentation," SR 4.3.1.1.3, page 3/4 3-1

Proposed Change: Modify the paragraph to use the term "verify" rather than "demonstrate" or "test." The paragraph currently reads:

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limits at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

This paragraph will read:

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limits at least once per 18 months. Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

Evaluation: These modifications will allow the licensee to verify the component response times rather than performing an actual RTT. These changes are in accordance with WCAP-13632-P-A, Revision 2, and the NRC staff's SER approving that report, and are, therefore, acceptable to the staff.

#### 3.1.2 TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation," SR 4.3.2.1.3, page 3/4 3-14

Proposed Change: Modify the paragraph to use the term "verify" rather than "demonstrate" or "test." The paragraph currently reads:

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within its limits at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one

channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" column of Table 3.3-3. The provisions of Specification 4.0.4 are not applicable to MSIV [main steam isolation valve] closure time testing. The provisions of Specification 4.0.4 are not applicable to the turbine driven auxiliary feedwater pump provided the surveillance is performed within 24 hours after the secondary steam generator pressure is greater than 680 psig.

This paragraph will read:

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within its limits at least once per 18 months. Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" column of Table 3.3-3. The provisions of Specification 4.0.4 are not applicable to MSIV closure time testing. The provisions of Specification 4.0.4 are not applicable to the turbine driven auxiliary feedwater pump provided the surveillance is performed within 24 hours after the secondary steam generator pressure is greater than 680 psig.

Evaluation: These modifications will allow the licensee to verify the component response times rather than performing an actual RTT. These changes are in accordance with WCAP-13632-P-A, Revision 2, and the NRC staff's SER approving that report, and are, therefore, acceptable to the staff.

- 3.1.3 TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation,"  
SR 4.3.2.1.3

Proposed Change: Remove the footnote associated with Salem, Unit No. 1, SR 4.3.2.1.3 regarding a one-time extension of the SR until the thirteenth refueling outage (1R13.)

This footnote currently reads:

\* A one time extension to this surveillance requirement for performance of relay time response and sequence testing of the safeguard equipment control (SEC) system, which partially satisfies the surveillance requirement, is granted during fuel cycle thirteen allowing Unit 1 operations to continue to the thirteenth refueling outage (1R13). The surveillance testing is to be completed at the appropriate time during the 1R13 outage, prior to the unit returning to Mode 4 upon outage completion.

Evaluation: This footnote was added by Amendment No. 222 to allow the surveillance interval to be extended until the completion of the thirteenth Salem, Unit No. 1 refueling outage (1R13.) 1R13 was completed in the Fall of 1999, and this footnote is no longer necessary. This change is considered administrative in nature and is, therefore, acceptable to the staff.

3.1.4 TS Bases 3/4.3.1 and 3/4.3.2, "Protective and Engineered Safety Features (ESF) Instrumentation," page B 3/4 3-2

Proposed Change: Delete the last two paragraphs at the end of this section, and insert three new paragraphs. The last two paragraphs currently read:

The measurement of response time at the specified frequencies provides assurance that the protective and the ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping, or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite, or offsite test measurements, or 2) utilizing replacement sensors with certified response times.

These will be replaced with the following three paragraphs:

The verification of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety features actuation associated with each channel is completed within the time limit assumed in the safety analysis. No credit is taken in the analysis for those channels with response times indicated as not applicable (i.e., N.A.).

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements" provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

The allocation for sensor response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. One example where response time could be affected is replacing the sensing assembly of a transmitter.

Evaluation: The proposed TS Bases changes describe the rationale that allows the licensee to verify the component response times by using an approved methodology instead of performing an actual RTT. The revisions are consistent with the proposed TS Bases provided in WCAP-13632-P-A, Revision 2. Therefore, the NRC staff has no objections to these changes.

### 3.2 Verification of Plant-Specific Conditions

The NRC staff specified several conditions in the SER approving WCAP-13632, Revision 2. These conditions must be met by individual licensees referencing the topical report before the guidance can be implemented in plant-specific TS change proposals. Based on the information provided by the licensee, the staff verified that PSEG has met, or will meet, the applicable conditions as follows:

- 3.2.1 Condition: Perform a hydraulic RTT prior to installation of a new transmitter/switch or following refurbishment of the transmitter/switch (e.g., sensor cell or variable damping components) to determine an initial sensor-specific response time value.

Licensee's Response: In its application dated April 11, 2003, PSEG acknowledged the NRC staff's stipulation to perform a hydraulic RTT prior to the installation of a new transmitter/switch or following refurbishment of the transmitter/switch. In addition, the licensee stated that "Consistent with the proposed change to SR 4.3.1.1.3 and SR 4.3.2.1.3 and EPRI Report NP-7243, Revision 1, 'Investigation of Response Time Testing Requirements,' the applicable plant procedures will include requirements that pressure sensor response times be verified by performance of an appropriate response time test prior to installation of a new sensor and re-verified following maintenance that may adversely affect sensor response time."

Evaluation: This response fulfills the condition in the NRC staff's generic SER, and is, therefore, acceptable to the staff.

- 3.2.2 Condition: For transmitters and switches that use capillary tubes, perform an RTT after initial installation and after any maintenance or modification activity that could damage the capillary tubes.

Licensee's Response: In its application dated April 11, 2003, PSEG stated that "[f]or those sensors that utilize capillary tubing, the applicable plant procedures will include requirements to perform RTT after initial installation and after any maintenance or modification that could damage the capillary tubes."

Evaluation: This response fulfills the condition in the NRC staff's generic SER, and is, therefore, acceptable to the staff.

- 3.2.3 Condition: If variable damping is used, implement a method to assure that the potentiometer is at the required setting and cannot be inadvertently changed or perform hydraulic RTT of the sensor following each calibration.

Licensee Response: In its letter dated August 28, 2003, PSEG stated that "[f]or pressure or differential pressure sensors with variable damping, plant procedures and/or other administrative controls will be revised and/or developed to assure the variable damping potentiometer can not be inadvertently changed or RTT testing will be performed following each calibration."

Evaluation: This response fulfills the condition in the NRC staff's generic SER, and is, therefore, acceptable to the staff.

- 3.2.4 Condition: Perform periodic drift monitoring of all Model 1151, 1152, 1153, and 1154 Rosemount pressure and differential pressure transmitters, for which RTT elimination is proposed, in accordance with the guidance contained in Rosemount Technical Bulletin No. 4 and continue to remain in full compliance with any prior commitments to Bulletin 90-01, Supplement 1. As an alternative to performing periodic drift monitoring of Rosemount transmitters, licensees may complete the following actions: (1) ensure that operators and technicians are aware of the Rosemount transmitter loss of fill-oil issue and make provisions to ensure that technicians monitor for sensor response time degradation during the performance of calibrations and functional tests of these transmitters, and (2) review and revise surveillance testing procedures, if necessary, to ensure that calibrations are being performed using equipment designed to provide a step function or fast ramp in the process variable, and that calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of the transmitter under test, thus allowing, with reasonable assurance, the recognition of significant response time degradation.

Licensee Response: In its application dated April 11, 2003, the licensee stated that: "PSEG responded to NRC Bulletins 90-01 and 90-01, Supplement 1, 'Loss of Fill-Oil in Transmitters Manufactured by Rosemount,' by submittals dated July 18, 1990, March 5, 1993, and April 27, 1994. These submittals address the actions taken by Salem with respect to loss of fill-oil for the Rosemount transmitters. Salem is currently in the process of developing a commitment change to eliminate the Bulletin 90-01 drift monitoring. As a result, Salem will implement the alternative actions identified in the NRC's SER dated September 8, 1995. Action (1) to ensure that the operators and technicians are aware of the Rosemount transmitter loss of fill-oil issue and make provisions to ensure that technicians monitor for sensor response time degradation is currently being implemented as documented in our March 5, 1993 response to Bulletin 90-01, Supplement 1. As stated in the March 5, 1993 response, calibration of the transmitters includes observation of the transmitter for sluggish response and during channel checks performed by the operating staff deviations from channel to channel are noted and investigated. To meet action (2) of the alternative approach, surveillance testing procedures will be reviewed and/or revised as necessary to ensure that calibrations are being performed using equipment designed to provide a step function or



fast ramp in the process variable and that calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of the transmitter under test, thus allowing, with reasonable assurance, the recognition of significant response time degradation.”

Evaluation: This response fulfills the condition in the staff’s generic SER, and is therefore acceptable to the staff.

### 3.3 Bounding Response Times

In addition to the above conditions, when a plant accident analysis determines that a mitigation system is required to actuate in a certain response time, the testing for that response time is generally required by TS. PSEG’s license amendment request will eliminate some of the testing previously required. WCAP-13632, Revision 2, and EPRI topical report NP-7243, Revision 1, provide adequate justification that calibrations and other surveillance testing will prove that the instruments are functioning properly. When the testing is not done to a portion of the instrument loop, but the TS requires the verification of assumptions made in the accident analysis, some assumed or bounding value for the untested portion of the loop must be added to the tested portion, to arrive at a total system response time. An acceptable bounding value will assure that 10 CFR 50.36(c) is met, and “that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.”

These bounding sensor response time values were not included in the original request from the licensee; however, this information was included in subsequent letters dated August 28, and September 22, 2003. Tables 1 and 2 list the bounding sensor response times for Salem which were included in PSEG’s September 22, 2003, request for additional information response.

**Table 1 - Engineered Safety Feature Actuation System (ESFAS) Functions**

<b>FUNCTION</b>	<b>SENSOR TYPE</b>	<b>SENSOR TIME</b>
Containment Pressure - High	Rosemount 1153HD6PA	0.800 sec
Pressurizer Pressure - High	Rosemount 1154SH9RA	0.600 sec
Steam Line Differential Pressure - High	Rosemount 1154SH9RA	0.100 sec
Steam Flow - High	Rosemount 1154HH5RH-N0037	1.000 sec
Containment Pressure - High-High	Rosemount 1153HD6PA	0.800 sec
S/G Water Level - High	Rosemount 1154HH4RH	1.000 sec
S/G Water Level - Low-Low	Rosemount 1154HH4RH	1.000 sec

**Table 2 - Reactor Trip System (RTS) Functions**

<b>FUNCTION</b>	<b>SENSOR TYPE</b>	<b>SENSOR TIME</b>
Pressurizer Pressure - Low	Rosemount 1154SH9RA	0.600 sec
Pressurizer Pressure - High	Rosemount 1154SH9RA	0.600 sec
RCS Loss of Flow	Rosemount 1154HH5RH	0.300 sec
S/G Level - Low-Low	Rosemount 1154HH4RH	1.000 sec

The bounding response time values were determined based upon actual values measured during past response time tests at Salem. The licensee provided the data for actual response times by letter dated September 28, 2003.

These administrative values for actual response time were established based upon review of the operating historical response time data. The NRC staff independently verified the licensee's calculations and determined a statistically valid administrative value by calculating the mean and  $2\sigma$  ( $2 \times$  sigma) standard deviation value of response times (a value which represents a 95 percent confidence level by definition). The NRC staff then determined the one-sided tolerance limit factor for a normal distribution for a 95/95 percent confidence level. The staff used NUREG-1475, "Applying Statistics," Table T-11b: One sided tolerance limit factor for a normal distribution for guidance. The results of these calculations are as shown below:

Sensor	Rosemount 1154HH5RH
Function	Reactor Coolant Flow
Mean	0.167 seconds
Standard Deviation	0.053 seconds
Sample Size	20
One-sided tolerance limit factor (95/95 Multiplier IAW NUREG 1475)	2.396
One-sided tolerance limit	0.294 seconds
PSEG administrative response time value	0.300 seconds

Sensor	Rosemount 1154SH9RA
Function	Pressurizer Pressure
Mean	0.420 seconds
Standard Deviation	0.052 seconds
Sample Size	7
One-sided tolerance limit factor (95/95 Multiplier IAW NUREG 1475)	3.399
One-sided tolerance limit	0.597 seconds
PSEG administrative response time value	0.600 seconds

Sensor	Rosemount 1154HH4RH
Function	Steam Generator Water Level
Mean	0.514 seconds
Standard Deviation	0.167 seconds
Sample Size	20
One-sided tolerance limit factor (95/95 Multiplier IAW NUREG 1475)	2.396
One-sided tolerance limit	0.294 seconds
PSEG administrative response time value	0.300 seconds

Sensor	Rosemount 1153HD6PA
Function	Containment Pressure
Mean	0.308 seconds
Standard Deviation	0.130 seconds
Sample Size	6
One-sided tolerance limit factor (95/95 Multiplier IAW NUREG 1475)	3.708
One-sided tolerance limit	0.792 seconds
PSEG administrative response time value	0.800 seconds

Sensor	Rosemount 1154SH9RA
Function	Steam Pressure
Mean	0.029 seconds
Standard Deviation	0.010 seconds
Sample Size	22
One-sided tolerance limit factor (95/95 Multiplier IAW NUREG 1475)	2.349
One-sided tolerance limit	0.052 seconds
PSEG administrative response time value	0.100 seconds

Sensor	Rosemount 1154HH5RH-N0037
Function	Steam Flow
Mean	0.739 seconds
Standard Deviation	0.069 seconds
Sample Size	20
One-sided tolerance limit factor (95/95 Multiplier IAW NUREG 1475)	2.396
One-sided tolerance limit	0.905 seconds
PSEG administrative response time value	1.000 seconds

In each case, the PSEG administrative response time value is more conservative than the one-sided tolerance limit; therefore, the licensee's values are acceptable to the NRC staff.

### 3.4 NRC Staff's Conclusion

The NRC staff has determined that: (1) the specific TS and TS Bases changes proposed by PSEG are consistent with approved Topical Report WCAP-13632, Revision 2; (2) the licensee has met the four conditions specified in the SER approving WCAP-13632, Revision 2; and (3) the individual administrative response times established by the licensee are more conservative than the one-sided tolerance limits derived from historical RTT test records. Therefore, based on its review, the NRC staff finds that the revised SRs will continue to meet 10 CFR 50.36(c) by assuring "that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." The NRC staff finds that the proposed TS changes are acceptable.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey State official was notified of the proposed issuance of the amendments. By letter dated June 27, 2003, the New Jersey, Department of Environmental Protection, Bureau of Nuclear Engineering (BNE), provided its comments related to PSEG's April 11, 2003, license amendment request. The letter stated that:

BNE recommends that approval of these changes be limited to only the pressure and differential sensors identified in WCAP-13632, Revision 2 as specified on page 15 of the NRC's evaluation of this WCAP that was attached to the NRC's September 5, 1995 letter.

The NRC staff's approval is limited to the specific Rosemount 1153 and 1154 sensor models and functions listed in this Safety Evaluation. Therefore, because the Rosemount 1153 and 1154 sensors are identified and included in the SER approving WCAP-13632, Revision 2, BNE's request is also consistent with the NRC staff's approval of PSEG's proposed TS change.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes SRs. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (68 FR 34672 ). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: October 28, 2003