



**PSE&G**

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038

Nuclear Department

**APR 28 1993**

NLR-N93018  
LCR 87-07, Rev. 1, Supplement 2

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Gentlemen:

SUPPLEMENT TO REQUEST FOR AMENDMENT  
SALEM GENERATING STATION  
UNIT NOS. 1 AND 2  
FACILITY OPERATING LICENSES DPR-70 AND DPR-75  
DOCKET NOS. 50-272 AND 50-311

In accordance with the requirements of 10CFR50.90, Public Service Electric and Gas Company (PSE&G) hereby transmits a request for amendment of Facility Operating Licenses DPR-70 and DPR-75 for Salem Unit Nos. 1 and 2. Pursuant to the requirements of 10CFR50.91(b)(1), a copy of this request for amendment has been sent to the State of New Jersey.

This submittal supersedes certain changes proposed in PSE&G's Request for Amendment letter dated March 6, 1991 (NLR-N90068). Our Request for Amendment dated September 20, 1991 (NLR-N91149), which proposed changes to Salem's Emergency Diesel Generator (EDG) test frequency, is not affected by this transmittal.

The changes proposed herein are made in response to NRC staff review of the Requests for Amendment identified above, as well as information relative to Salem's EDG load calculation and testing, provided in PSE&G's letters dated December 19, 1991, January 31, 1992 and August 19, 1992. Attachment 1 contains a description, reason and justification for the proposed changes, including PSE&G's determination of No Significant Hazards Consideration. Attachment 2 contains the affected pages from the March 6, 1991 letter, revised with pen and ink changes.

PSE&G requests that the implementation date for Unit 1 be no later than upon restart from the first refueling outage subsequent to issuance of the approved License Amendment. This will allow sufficient time for procedure revision and refueling outage planning to account for the changes to the Unit 1 surveillance tests performed on an 18 month cycle. For Unit 2,

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*ADD 1/1*

The power is in your hands.  
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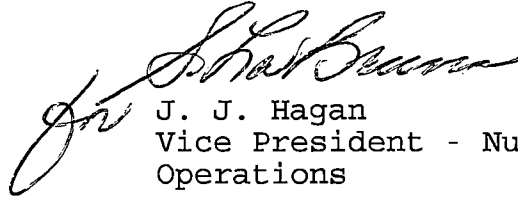
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implementation within 60 days of issuance of the License  
Amendment is requested.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. J. Hagan".

J. J. Hagan  
Vice President - Nuclear  
Operations

Affidavit

Attachments (2)

C Mr. J. C. Stone  
Licensing Project Manager

Mr. T. Johnson  
Senior Resident Inspector

Mr. T. Martin, Administrator  
Region I

Mr. K. Tosch, Chief  
Bureau of Nuclear Engineering  
Department of Environmental Protection  
CN 415  
Trenton, New Jersey 08625

APR 28 1993

REF: NLR-N93018

STATE OF NEW JERSEY )  
 ) SS.  
COUNTY OF SALEM )

Stanley LaBruna, being duly sworn according to law deposes and says:

I am Vice President - Nuclear Engineering of Public Service Electric and Gas Company, and as such, I find the matters set forth in our letter, NLR-N93018, concerning the Salem Generating Station, Unit Nos. 1 and 2, are true to the best of my knowledge, information and belief.

*Stanley LaBruna*  
\_\_\_\_\_

Subscribed and Sworn to before me  
this 28th day of April, 1993

*Sherry L. Cagle*  
\_\_\_\_\_  
Notary Public of New Jersey

SHERRY L. CAGLE  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires March 5, 1997

My Commission expires on \_\_\_\_\_

## ATTACHMENT 1

PSE&G previously requested Salem EDG Technical Specification changes via letters dated March 6, 1991 (NLR-N90068) and September 20, 1991 (NLR-N91149). The changes proposed herein supersede certain previously submitted changes. Therefore, the revised Technical Specification pages in Attachment 2 use the marked-up pages from the March 6, 1991 letter. Technical Specification Table 4.8-1, from the September 20, 1991 letter is not affected by this change, but is included in Attachment 2 for information.

I. DESCRIPTION OF PROPOSED CHANGES

1) Revise proposed Action b. for Limiting Condition for Operation (LCO) 3.8.1.1, adding the word "by" and the phrase "and at least once per 8 hours thereafter," as follows:

"b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter . . ."

NOTE: Adding "by" applies to Unit 1 only.

2) Revise proposed Action b. for LCO 3.8.1.1, to allow a diesel to be declared inoperable for preventive maintenance or pre-test inspection without having to start the other two diesels, as follows:

b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. If the diesel generator is inoperable for preplanned preventive maintenance or pre-test inspection, the two remaining OPERABLE diesel generators need not be tested. If the diesel generator is inoperable for any reason other than pre-planned preventive maintenance or pre-test inspection, demonstrate the OPERABILITY of the remaining diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours. In any case, restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

I. DESCRIPTION OF PROPOSED CHANGES (continued)

- 3) Delete the "\*" from the first sentence of proposed Surveillance Requirement 4.8.1.1.2, as follows:

"4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:"

Relocate the "\*" to the individual Surveillance Requirements calling for a diesel start. The "\*" indicates that diesel starts shall be in accordance with manufacturer's recommendations unless the surveillance criteria specify otherwise.

- 4) Replace "184 days" with "6 months", and add the phrase "from ambient conditions" to proposed Surveillance Requirement 4.8.1.1.2.c, as follows:

"c. At least once per 6 months the diesel generator shall be started from ambient conditions and accelerated to at least 900 rpm in less than or equal to 10 seconds.\* The generator voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 13 seconds after the start signal."

Add the following definition of "ambient conditions" to BASES Section 3/4.8:

"For the purposes of establishing initial conditions for surveillance testing, "ambient conditions" mean that the diesel lube oil temperature is  $120 \pm 20$  degrees F. The minimum lube oil temperature for an OPERABLE diesel is 100 degrees F. Lube oil heaters are designed to maintain the oil temperature at approximately 120 degrees F."

- 5) Revise the largest single load rejection test criterion of proposed Surveillance Requirement 4.8.1.1.2.d.2, from "785 kw" to "the service water pump motor load," as follows:

"2. Verifying that, on rejection of a load greater than or equal to the maximum service water pump motor load, the voltage and frequency are restored to  $4160 \pm 420$  volts and  $60 \pm 1.2$  Hz within 4 seconds."

- 6) Revise proposed Surveillance Requirement 4.8.1.1.2.d.7, to delete "maximum design load and associated duration" from the loading criteria for the 24 hour endurance run, as follows:

"7. Verifying the diesel generator operates for at least 24 hours\*. During the first 2 hours of this test, the diesel generator shall be loaded to ~~its-maximum-design load-and-associated-duration,~~ ~~or-between~~ 2760-2860 kw ~~-whichever-is-greater-.\*"~~

I. DESCRIPTION OF PROPOSED CHANGES (continued)

Revise proposed Surveillance Requirement 4.8.1.1.2.d.8, replacing "maximum design load and associated duration" with "two hour rating of 2860 kw," as follows:

"8. Verifying that the auto-connected loads to each diesel generator do not exceed the two hour rating of 2860 kw."

- 7) Add a sentence to the "\*\*\*" footnote to proposed Technical Specification 3/4.8.1.1, relative to the hot restart test after the 24 hour endurance run, as follows:

"\*\*\* Failure of a test per Surveillance Requirement 4.8.1.1.2.d.6.b, following performance of Surveillance Requirement 4.8.1.1.2.d.7, does not require that the 24 hour test of 4.8.1.1.2.d.7 be repeated. As an alternative, the EDG shall be loaded to 2500-2600 kw for one hour, or until operating temperatures have stabilized, prior to repeating Surveillance Requirement 4.8.1.1.2.d.6.b."

- 8) Revise the Shutdown surveillance requirements of Technical Specification 4.8.1.2 to delete the exception to Surveillance Requirement 4.8.1.1.2.a.2:

"4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE\* by performance of each of the Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2 (~~except-for-the synchronization-and-60-minute-run-requirement-of-4-8-1-1-2-a-2~~)\*, 4.8.1.1.3 (except for requirement 4.8.1.1.3.a.2) and 4.8.1.1.4.

Delete the footnote associated with the exception to 4.8.1.1.2.a.2, which would have required a surveillance test during shutdown to include a one hour operability run, in order to consider it a "valid test" per Regulatory Guide 1.108.

- 9) Revise the second paragraph in BASES Section 3/4.8, to accurately reflect the three onsite power sources used at each Salem unit, as follows:

"The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one-redundant-set-- two independent sets of the onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of ~~the-ether~~ one onsite A.C. source."

## II. REASON FOR THE PROPOSED CHANGES

Based on their review of PSE&G's Requests for Amendment of March 6, 1991 and September 20, 1991, NRC staff raised several questions regarding Salem's EDG load calculation and testing, to which PSE&G responded via letters dated December 19, 1991 and January 31, 1992. On May 11, 1992, PSE&G and NRC personnel met to discuss the NRC concerns. This meeting is summarized by NRC letter dated June 3, 1992. PSE&G letter dated August 19, 1992 provided additional information requested by the NRC at the meeting. Via telecon in December 1992, the NRC identified the outstanding issues relative to the Technical Specifications.

The purpose of the proposed changes is to address the outstanding issues identified by the NRC relative to Salem's EDG Technical Specifications, with the exception of change Nos. 2, 4 and 8. Change #2, which would preclude having to demonstrate operability of two diesels when one is inoperable for preventive maintenance or inspection, is being proposed primarily to facilitate pre-test inspections for fluid accumulation in the diesel cylinders. Changing "184 days" to "6 months" for change #4 would be consistent with the scheduling frequencies presently in use at Salem. Change #8 would require a one hour run for the diesel operability tests done during shutdown, which improves the Technical Specifications by reducing unloaded diesel runs and facilitates accounting of "valid tests" per Regulatory Guide 1.108.

## III. JUSTIFICATION FOR THE PROPOSED CHANGES

1) These changes proposed to Action b. are editorial. The word "by" and the phrase "and at least once per 8 hours thereafter," were inadvertently omitted from the March 6, 1991 submittal and are being reinstated, consistent with the present Technical Specifications.

2) When a diesel is inoperable because of pre-planned preventive maintenance or pre-test inspection, there is no reason to suspect the operability of the remaining two diesels is challenged. Therefore, the proposed change would add an exception to the Action Statement, to prevent unnecessary diesel starts when one diesel is declared inoperable for these reasons. The present Action statement discourages activities that improve overall reliability of the EDG's, such as pre-test inspections, because they render the EDG inoperable for brief periods of time during power operation.

This change would facilitate pre-test inspections for fluid accumulation in the engine cylinders. As described in NRC Information Notice 91-62, a pre-test inspection at another facility allowed the operator to avoid diesel engine damage due to hydraulic lockup. In order to address the concerns of the Information Notice, PSE&G would like to have the ability to

## II. JUSTIFICATION FOR THE PROPOSED CHANGES (Continued)

declare a diesel inoperable for such an inspection, without having to start the remaining two diesels per the Action Statement.

3) Relocating the "\*" to the individual Surveillance Requirements calling for a diesel start is essentially a format change made at the request of the NRC staff. It would emphasize the applicability of the note requiring that diesel starts shall be in accordance with manufacturer's recommendations for engine prelube, warm-up and loading, unless loading requirements are specified in the individual Surveillance Requirement.

4) "184 days" would be replaced with "6 months" in order to correspond with the frequencies defined in Technical Specification Table 1.2, "Frequency Notation." "184 days" is used in the Generic Letter 84-15 sample Technical Specifications for the diesel start from ambient conditions. "6 months" is being proposed to establish a test frequency similar to the Generic Letter recommendations, using nomenclature consistent with the Salem Generating Station Technical Specifications.

The phrase "from ambient conditions" is being proposed for the 6 month EDG operability test of Surveillance Requirement 4.8.1.1.2.c. This change is consistent with the Technical Specifications endorsed by Generic Letter 84-15. The Salem diesels use a prelubrication and lube oil heater system. Therefore, our previous amendment requests did not include "from ambient conditions" because it was not considered necessary for Salem Surveillance Requirements. The NRC reviewer's concern is that operability should be periodically demonstrated under the normal conditions for which the EDG's may be called upon to operate.

Because "ambient" implies the diesel is consistent with the surrounding environmental conditions (i.e., cold start), it is being defined in the BASES Section as lube oil temperature at  $120 \pm 20$  degrees F. This is identical to the definition of "ambient" used during startup testing, and is consistent with operation of the diesel auxiliary systems. The minimum lube oil temperature for diesel operability is 100 degrees F. Lube oil heaters are automatically started at approximately 110 degrees F, and are designed to maintain lube oil temperature at approximately 120 degrees F.



III. JUSTIFICATION FOR THE PROPOSED CHANGES (Continued)

5) Proposed Surveillance Requirement 4.8.1.1.2.d.2 requires demonstration of acceptable EDG response to rejection of the largest single diesel load. The largest EDG load at Salem is the Service Water (SW) pump motor. The current Technical Specifications reflect an outdated 785 kw load, although they do not preclude testing consistent with the present configuration. The EDG Load Calculation uses a value of 809 kw for the motors, consistent with measured pump horsepower demands following pump impeller replacements. The proposed Technical Specifications would continue to require verification of acceptable EDG response to rejection of the largest single load. It would also allow some flexibility in the surveillance procedure acceptance criteria, to reflect any future variations in actual service water pump motor demands. Design changes will be reviewed every 18 months to ensure the single largest load is enveloped by the load rejection test.

6) Proposed Surveillance Requirement 4.8.1.1.2.d.7 defines the acceptance criteria for the 24 hour endurance run. Our March 6, 1991 letter proposed using the "maximum design load and associated duration" as the loading requirement for the first two hours of the run, if the load calculation determined the load condition to be greater than the 2 hour rating of 2860 kw. The change proposed herein would require the loading for the first two hours of the test to be 2760-2860 kw. This change would simplify the test procedure, eliminates open ended acceptance criteria that could result in overloading the EDG's, and demonstrates the ability of the EDG to perform at approximately the two hour rating of the EDG.

Proposed Surveillance Requirement 4.8.1.1.2.d.8 requires verification that the auto connected loads to each EDG are acceptable. Our March 6, 1991 letter proposed using "maximum design load and associated duration" as the acceptable auto connected load condition, based on the manufacturer's ratings establishing recommended limits for total EDG loads. The NRC reviewers found the open ended acceptance criteria unacceptable, and requested information relative to the method used to meet the Surveillance Requirement (discussed in PSE&G letters dated December 19, 1991 and August 19, 1992, and NRC letter dated June 3, 1992). Auto connected loads are measured each refueling outage. However, because Salem's ECCS and containment spray pumps do not have full flow test lines, the test loads are significantly lower than worst case. With the pumps operating at low efficiency in the recirculation mode, calculating worst case loads based on flow test data is not feasible.

### III. JUSTIFICATION FOR THE PROPOSED CHANGES (Continued)

The EDG's two hour rating of 2860 kw is proposed as the limit for total auto connected loads. As stated in our August 19, 1992 letter, the design control process is presently the primary means of controlling auto connected load growth. A design review will be performed every 18 months to verify that load growth has not resulted in exceeding the acceptance criteria.

7) The proposed change to the "\*\*\*\*" note would specify acceptable conditions for performing the hot restart test following the 24 hour run, if the first hot restart test (after the 24 hour endurance run) is unsuccessful. The March 6, 1991 proposal stated that the 24 hour run would not need to be repeated if the hot restart was unsuccessful. This proposal would require the diesel to be run in a loaded condition for approximately one hour, to achieve operating conditions comparable to the first hot restart attempt.

8) The present Technical Specifications do not require a loaded run to demonstrate diesel operability during Modes 5 and 6. PSE&G is proposing to include a one hour loaded run for the monthly operability test performed during shutdown. This change would reduce the number of unloaded diesel runs. It would also eliminate the confusion associated with Mode-dependent monthly tests. Because unloaded runs do not qualify as valid tests for establishing the test frequencies of Technical Specification Table 4.8-1 (per Regulatory Guide 1.108, Rev. 1), this change would allow monthly tests during shutdown to qualify as valid tests.

9) The BASES description of onsite power source operability requirements is consistent with a standard nuclear unit design with two EDG's and two independent D.C. power divisions. The proposed changes are consistent with Salem's design, which use three EDG's and three independent battery divisions. The changes do not reflect any changes in accident analysis assumptions, and are corrections to reflect the original design of the A.C. and D.C. power distribution systems.

### IV. DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

The following is applicable to the changes proposed in our letters dated March 6, 1991 and September 20, 1991, as well as the changes proposed herein.

The proposed changes to Technical Specifications 3/4.8.1.1 and 3/4.8.1.2 for Salem Unit Nos. 1 and 2:

- (1) do not involve a significant increase in the probability or consequences of an accident previously evaluated. Reducing the test frequency while in an action statement and

IV. DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION  
(Continued)

modifying Emergency Diesel Generator (EDG) starting and loading requirements is intended to enhance diesel reliability by minimizing repetitive testing and facilitating testing in accordance with the manufacturer's recommendations. The proposal to eliminate Action Statement operability testing for a diesel inoperable because of preventive maintenance or pre-test inspection will facilitate the performance of activities to enhance overall EDG reliability.

The proposed changes to EDG test loads will continue to demonstrate the ability of the EDG's to respond to loading conditions, consistent with the manufacturer's ratings. Using the proposed basis for determining test frequency according to individual diesel generator performance will prevent overtesting of the diesels because it would increase the test frequency of only those diesels which have an increase in failure rate.

The changes proposed to make the Unit 1 EDG surveillance requirements identical to that of Unit 2 is a conservative change; it will provide Unit 1 with a more comprehensive testing program. The proposed changes will continue to assure availability of the diesels and should serve to enhance EDG reliability and consequently the overall safe operation of the Salem Generating Station.

- (2) do not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed change affects testing frequency, starting and loading practices only and has no impact on the accident analysis. No new operating modes or equipment are introduced which could initiate or affect the progression of an accident.
- (3) do not involve a significant reduction in a margin of safety. The changes in the testing requirements do not adversely affect the capability of the diesels to perform their required function. The purpose of the proposed changes is to increase the overall reliability of the diesels. In adopting many of the suggestions identified in GL 84-15, the requested change would implement actions which have been determined by the NRC to reduce the risk of core damage from station blackout events.

Therefore, PSE&G has concluded that the changes proposed herein do not involve a Significant Hazards Consideration.

NLR-N93018

ATTACHMENT 2

NLR-N93018

**ATTACHMENT 2**