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Company

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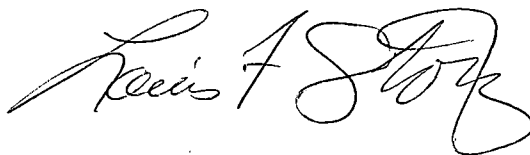
**REQUEST FOR ADDITIONAL INFORMATION REGARDING
ELECTRICAL POWER SOURCES DURING SHUTDOWN
SALEM GENERATING STATION UNIT NOS. 1 AND 2
FACILITY OPERATING LICENSES DPR-70 AND DPR-75
DOCKET NOS. 50-272 AND 50-311**

Ladies and Gentlemen:

On January 23, 1998, the NRC issued a request for additional information concerning an application for an amendment to the Technical Specifications (TS) submitted by Public Service Electric and Gas (PSE&G) on September 28, 1995. The request for amendment proposed changes to TS Section 3/4.8.1.2, "Electrical Power Sources-Shutdown." Responses to the NRC's questions are contained in Attachment 1 of this letter.

If you have any questions concerning the above information, please do not hesitate to contact us.

Sincerely,



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Attachment 1
Response to Request for Additional Information
LR-N980137

NRC Question 1:

Describe how the current Technical Specifications (TSs) surveillance requirements in TS 4.8.1.2 are being satisfied for the emergency diesel generators (EDGs) that need to be operable during Modes 5 (cold shutdown) and 6 (refueling).

PSE&G Response:

Technical Specification (TS) 4.8.1.2 currently requires the performance of Surveillance Requirements (SR) 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3 (except for requirement 4.8.1.1.3.a.2) and 4.8.1.1.4. For an EDG to be declared operable in Modes 5 and 6, the surveillance requirements listed above must be satisfied. Surveillance testing for the EDGs is performed in Modes 5 and 6 at the frequencies specified in the above surveillance requirements to maintain the operability of the EDGs. There are no differences between the testing for the above listed surveillances performed in Modes 1 through 4 and the testing performed in Modes 5 and 6 for demonstrating EDG operability with the exception of SR 4.8.1.1.3.a.2. SR 4.8.1.1.3.a.2 requires that at least once per 31 days that the fuel oil and transfer system is verified to be operable by, "verifying that both fuel transfer pumps can be started and transfer fuel from the fuel storage tanks to the day tanks." In modes 5 and 6, TS 3.8.1.2.b.3 only requires one fuel transfer pump to be operable. Although the TSs do not specifically require surveillance testing for the fuel transfer pump in Modes 5 and 6, surveillance testing of the one required operable fuel transfer pump is performed on a 31 day frequency.

NRC Question 2:

Provide additional information to justify your conclusion that the following surveillance requirements are not required to be performed to demonstrate that the EDG's are OPERABLE during Modes 5 and 6:

TS 4.8.1.1.1.b	TS 4.8.1.1.2.d.4	TS 4.8.1.1.2.d.9
TS 4.8.1.1.2.d.2	TS 4.8.1.1.2.d.6	TS 4.8.1.1.2.e
TS 4.8.1.1.2.d.3	TS 4.8.1.1.2.d.7	TS 4.8.1.1.2.f

PSE&G Response:

TS 4.8.1.1.1.b (Vital Bus Transfer Test):

TS 3.8.1.2 only requires one circuit between the offsite transmission network and the onsite Class 1E distribution system (vital bus system) to be operable in modes 5 and 6. Therefore, only one of the two 13/4 Kv transformer feeding the

Attachment 1
Response to Request for Additional Information
LR-N980137

vital buses is required to be operable in modes 5 and 6. Demonstrating the ability of the vital bus to transfer from one 13/4 Kv transformer to the other 13/4 Kv transformer when only one 13/4 Kv transformer is required to be operable in modes 5 and 6 will not ensure that the vital bus maintains power. Should the 13/4 Kv transformer supplying the vital buses be lost, the two required standby EDGs would either automatically start or will be manually started to supply their respective loads. Supplying power from the EDGs will allow sufficient time to allow compensatory actions to be taken to either restore power from the offsite transmission network or ensure additional diesel fuel oil supply.

TS 4.8.1.1.2.d.2 (Single Largest Load Rejection):

The design capability of the EDGs at Salem is such that they are capable of successfully rejecting the single largest load (e.g., Service Water Pump (SWP)). The concern associated with the largest load rejection is that the EDG would trip on overspeed during automatic loading of the EDG and would not recover in sufficient time to continue with the automatic sequential loading of the accident loads. Since the Safeguards Equipment Control (SEC) System is not required to be operable in Modes 5 and 6 as stated below, operator action can be taken to restart the EDG and manually load the EDG with the necessary loads.

TS 4.8.1.1.2.d.3 (Loss of Offsite Power (LOOP) Test); TS 4.8.1.1.2.d.4 (Engineered Safety Feature (ESF): Safety Injection Actuation Signal); TS 4.8.1.1.2.d.6 (Combined ESF and LOOP Signal Test); TS 4.8.1.1.2.d.9 (Test Mode Override by ESF Signal Test):

The Safeguards Equipment Control (SEC) System is only required to be operable in Modes 1 through 4 in accordance with TS Table 3.3-3. The SEC controls the automatic starting and loading of the EDGs during a LOOP, Loss of Coolant Accident (LOCA) or a LOOP/LOCA. The SEC was designed to promptly sequence loads during accident conditions in Modes 1 through 4. Immediate sequencing of loads is not necessary in Modes 5 and 6.

If the SEC is available, then the EDG would automatically start and be loaded in the event of a LOOP. If the SEC is not available to load the EDGs in the event of a LOOP, the EDGs would be manually loaded in accordance with operations procedures. Performance of the EDG monthly surveillance testing (Surveillance Requirement 4.8.1.1.2) will ensure that the EDGs can perform their design function to carry 100% load and provides assurance that the EDGs can be started and loaded in modes 5 and 6.

Since the safety injection actuation system is not required to be operable in modes 5 and 6, verifying that an EDG operating in test mode is automatically returned to standby operation and automatically energizes emergency loads

Attachment 1
Response to Request for Additional Information
LR-N980137

upon receipt of a safety injection signal is not necessary to be performed. The EDG would be manually loaded during Modes 5 and 6,

TS 4.8.1.1.2.d.7 (24 Hour Endurance Run):

The primary purpose of the 24 hour endurance run test is to demonstrate both emergency and full load carrying capability of the EDG. In Modes 5 and 6, the loading of the EDGs is less than that normally seen during a Loss of Coolant Accident (LOCA). Therefore performance of SR 4.8.1.1.2.a and 4.8.1.1.2.c will continue to provide assurance that the EDG is capable of starting and able to accept load. Parameters used for monitoring the condition of the running EDG are expected to stabilize within the first hour of testing. Therefore malfunction of the engine or the supporting systems should show up as an abnormal value of such parameters shortly after the diesel starting, such as a rapid rise of lube oil/jacket water temperature, fluid leakage, vibration, governor and fuel delivery malfunction. Also, TS 4.0.5 testing of the operable fuel oil transfer pump will ensure that the fuel system can provide design flow rates to the operable EDGs for prolonged loss of power events.

TS 4.8.1.1.2.e (10 Year Simultaneous Start):

Modifications which could affect diesel generator independence could be expected to be implemented up until the plant would enter Mode 4. Also, only two EDGs are required to be operable in modes 5 and 6. To ensure that all EDGs are operable for this testing and the modifications that would affect independence of the EDGs have been implemented for each EDG, testing should not occur until prior to entering mode 4 when all three EDGs are made operable prior to making the mode transition. If testing is required in modes 5 and 6 to demonstrate operability of the EDGs for mode 5 and 6 operation, multiple tests may need to be performed when each EDG is modified or when each EDG is required to be operable in Modes 5 and 6. The purpose of this surveillance is to demonstrate the independence of the EDGs and should be performed when all three EDGs are required to be operable which would be just prior to entry into mode 4.

TS 4.8.1.1.2.f (Hot Restart):

The purpose of the hot restart test is to ensure that the EDG can restart subsequent to the EDG being run (from a hot condition). The starting time of the EDG, for achieving rated frequency and voltage, is based on the accident analysis requirements for mitigation of a LOCA. Since LOCAs are not postulated to occur in modes 5 and 6, there is no immediate time requirement for an EDG start during Modes 5 and 6. Surveillance requirement 4.8.1.1.2.f also requires that the hot restart test be performed after the EDGs have been

Attachment 1
Response to Request for Additional Information
LR-N980137

operated for a period of two hours. With the changes proposed by this request for amendment, only surveillance requirement 4.8.1.1.2.a and 4.8.1.1.2.c would be performed to demonstrate operability of the EDGs in modes 5 and 6. These surveillance requirements only load the EDGs for sixty minutes. Therefore the requirement of 4.8.1.1.2.f would not be normally met unless the EDGs are purposefully run for a period of two hours.

Since the loading of the EDGs for the surveillance testing is performed by paralleling the EDGs to the grid, the amount of time that the EDGs are paralleled to the grid should be minimized for the operable EDGs. If a grid disturbance were to occur when the EDG is paralleled to the grid for surveillance testing, an operable EDG may be rendered incapable of performing its function (the EDG may trip as a result of one of the protective trip features) potentially causing the loss of the associated AC bus which would further degrade the limited AC sources available in modes 5 and 6.

Additional Information

Surveillance testing currently required by TS 3.8.1.1 to demonstrate the operability of the EDGs in Modes 1 - 4, that will not be required to demonstrate operability of the EDGs in Modes 5 and 6, will be performed prior to entry into Mode 4.

NRC Question 3:

Discuss whether the EDG full load rejection test should be included in the TSs.

PSE&G Response:

The EDG full load rejection test should not be included in the Technical Specifications since performance of full load reject causes a high voltage spike on the generator. The ALCO EDG Owners group does not recommend exposing the machine to these stresses as part of periodic surveillance testing. The full load reject test has never been a part of periodic surveillance testing program at Salem and PSE&G does not have any plans to include the full load reject test into the periodic surveillance testing program.

NRC Question 4:

TS 4.8.1.1.2.d.7, "EDG 24 hour load test", does not include load power factor as specified in the standard TSs. Discuss whether this parameter should be included.

Attachment 1
Response to Request for Additional Information
LR-N980137

PSE&G Response:

Although the current TS do not require and have never required the EDGs to be loaded to a specific power factor during the 24 hour load test, surveillance testing procedures provide direction to load the EDG with KVAR loading during the performance of the 24 hour load test. PSE&G does not plan to revise the TSs to include a power factor at this time.

NRC Question 5:

Describe the method the EDG will be loaded during shutdown.

PSE&G Response

If the SEC is available, then the EDG would automatically start and be loaded in the event of a LOOP. If the SEC is not available to load the EDGs in the event of a LOOP in modes 5 and 6, the EDGs would be manually loaded in accordance with operations procedures.

NRC Question 6:

TS 4.8.1.2 does not require the performance of a surveillance to determine fuel oil transfer pump operability. This surveillance requirement is included in the standard TSs. Discuss whether TS 4.8.1.2 should include this item.

PSE&G Response:

Although TS 4.8.1.2 excludes the performance of SR 4.8.1.1.3.a.2 during modes 5 and 6, PSE&G is still required to perform TS 4.0.5 testing of the fuel oil transfer pump that is required to be operable in these modes (LCO 3.8.1.2.b.3). Also, although TS 3.8.1.2 does not specifically require surveillance testing for the fuel transfer pump in Modes 5 and 6, surveillance testing of the one required operable fuel transfer pump is performed on a 31 day frequency.