

Public Service  
Electric and Gas  
Company

Joseph J. Hagan

Public Service Electric and Gas Company, P.O. Box 236, Hancocks Bridge, NJ 08038 609-339-1200

JUN 29 1994

Vice President - Nuclear Operations

NLR-N94099  
LCR 94-15

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

Gentlemen:

REQUEST FOR AMENDMENT  
EMERGENCY DIESEL GENERATOR FUEL OIL STORAGE  
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 request would increase the Technical Specification minimum volume of oil contained in the Diesel Fuel Oil Storage Tanks (DFOSTs) at the Salem Generating Station. It would also revise the UFSAR description of the fuel oil storage system capability. These changes are being submitted to resolve Deviation 50-272/311/93-82-07, received during the NRC Electrical Distribution System Functional Inspection (EDSFI).

Attachment 1 includes the description and justification for the proposed changes, including PSE&G's Determination of No Significant Hazards Consideration. Attachment 2 contains the Technical Specification pages revised with pen and ink changes.

Sincerely,



080120

9407070252 940429  
PDR ADOCK 05000272  
P PDR

A001  
11

JUN 29 1994

Document Control Desk  
NLR-N94099

-2-

Affidavit

Attachments (2)

C Mr. T. T. Martin, Administrator - Region I  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Mr. J. C. Stone, Licensing Project Manager - Salem  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

Mr. C. Marschall (S09)  
USNRC Senior Resident Inspector

Mr. K. Tosch, Manager, IV  
NJ Department of Environmental Protection  
Division of Environmental Quality  
Bureau of Nuclear Engineering  
CN 415  
Trenton, NJ 08625

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

J. J. Hagan, being duly sworn according to law deposes and says:

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

  
\_\_\_\_\_

Subscribed and Sworn to before me  
this 29<sup>th</sup> day of June, 1994

  
\_\_\_\_\_  
Notary Public of New Jersey

My Commission expires on \_\_\_\_\_  
**KIMBERLY JO BROWN**  
**NOTARY PUBLIC OF NEW JERSEY**  
~~My Commission Expires April 21, 1998~~

**ATTACHMENT 1**

**I. DESCRIPTION OF THE PROPOSED CHANGES**

**Technical Specification Changes**

Revise Salem Generating Station (SGS) Unit No. 1 and 2 Technical Specification (TS) 3.8.1.1.b.2, to increase the minimum allowable volume of the Diesel Fuel Oil Storage Tanks (DFOST's), from 20,000 gallons per tank to 23,000 gallons per tank. This TS is applicable in Modes 1 through 4.

Revise TS 3.8.1.2.b.2 to increase the minimum allowable combined volume of the DFOST's, from 20,000 gallons to 23,000 gallons. This TS is applicable in Modes 5 and 6.

**UFSAR Changes**

UFSAR Appendix 3A, page 3A-16, relative to the SGS position on USNRC Regulatory Guide 1.32, "Use of IEEE Standard 308-1971, 'Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations'", which currently reads,

"The Salem Station design satisfies the requirements of IEEE Standard 308-1971, thereby conforming with the intent of the Regulatory Guide."

would be replaced with the following paragraph:

"The Salem Station design satisfies the requirements of IEEE Standard 308-1971, with the exception that Class 1 diesel fuel oil storage capacity provides less than seven days of diesel operation under worst case loading. See Section 9.5.4 for a description of how long term Emergency Diesel Generator fuel oil storage requirements are met."

Section 9.5.4, first paragraph on top of page 9.5-28, which currently reads,

"The 30,000-gallon fuel oil storage tanks per unit are the source of fuel oil supply for the diesel generators. These tanks can be filled from the 20,000 barrel fuel oil storage tank or via the emergency truck connection provided in the diesel generator area. Each 30,000-gallon fuel oil storage tank can supply one diesel with enough oil to run it for seven days at full load."

would be replaced with the following paragraph:

"The two 30,000 gallon (nominal) fuel oil storage tanks per unit are the Seismic Class I source of fuel oil for the diesel

generators. These tanks can be filled without disrupting diesel generator operation from the 20,000 barrel fuel oil storage tank or via the emergency fill connection located along the outside wall of the diesel generator rooms. The combined volume of both 30,000 gallon fuel oil storage tanks contains sufficient fuel oil at the Technical Specification minimum volume to supply two diesel generators, operating at the most limiting load profile for LOCA with loss of offsite power, for approximately 4½ days. Operation of the diesel generators beyond this time requires that fuel oil be added to the 30,000 gallon storage tanks from either the on-site 20,000 barrel storage tank or from an off-site source."

## II. REASON FOR THE PROPOSED CHANGES

The basis for the original TS minimum volume requirement of 20,000 gallons is not well documented. PSE&G conducted a review of fuel oil consumption rate, storage tank usable volume, and diesel generator loading in order to reconstitute the basis for the EDG fuel oil storage system. Based on the results of this effort, which is discussed in Section III, PSE&G is proposing to increase the minimum required volume to increase the time available to restore DFOST inventory in the event of a long term demand for EDG operation. The UFSAR changes are included to accurately establish the relationship between the proposed Technical Specification volume limit and time of diesel operation based on time dependent fuel oil consumption.

This proposed change addresses the concerns documented in the NRC Electrical Distribution System Functional Inspection Report (Deviation 50-272/93-82-07; 50-311/93-82-07) dated November 30, 1993.

## III. JUSTIFICATION FOR THE PROPOSED CHANGES

### **Description of Fuel Oil Storage System**

The EDG Fuel Oil Storage and Transfer Systems installed at Salem Generating Station, Units 1 and 2, each include two 30,000 gallon (nominal) Diesel Fuel Oil Storage Tanks (DFOSTs), two Fuel Oil Transfer Pumps, three 550 gallon (nominal) Fuel Oil Day Tanks, and miscellaneous piping, strainers, and filters. The function of these systems is to provide an uninterrupted source of fuel oil to the EDGs in the event of a design basis accident (DBA) combined with a loss of offsite A.C. power. These systems are classified as Nuclear Class 3, Seismic Class I. The piping configuration is such that each transfer pump is capable of taking suction from both DFOSTs, and one pump is capable of delivering fuel oil at a rate exceeding the consumption rate of all three diesels at full load. The transfer pumps are powered by independent Class 1E A.C. sources.

Normal make-up to the Diesel Fuel Oil Storage Tanks (DFOSTs) is

supplied by the on-site 20,000 barrel (~840,000 gallon) Fuel Oil Storage Tank (FOST). The FOST, piping and valves are classified as non-safety related, Seismic Class III up to the Seismic Class I tank inlet valve for each DFOST. Emergency fill connections are provided for each SGS Unit to allow transfer of fuel oil to the DFOSTs from offsite sources. These connections were originally classified as Seismic Class III, but have since been shown to meet the applicable stress analysis codes (USAS B31.1, 1967 and ANSI B31.1, 1977), including Seismic Class I criteria.

### **Regulatory Criteria**

Per UFSAR Appendix 3A, Regulatory Guide 1.32 (Safety Guide 32), "Use of IEEE Std 308-1971, Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations" is applicable to SGS Units 1 and 2. Regulatory Guide 1.32 endorses IEEE 308-1971 with two exceptions, neither of which affect the Diesel Fuel Oil Storage System. IEEE 308-1971, Section 5.2.1(6) states that stored energy at the site shall have the capacity to operate the standby power supply while supplying post-accident power requirements to a unit for the longer of seven days or the time required to replenish the energy from sources away from the generating unit's site following the limiting design basis event.

Regulatory Guide 1.137, while not a Salem commitment for fuel oil system design, provides a standard industry approach for calculating fuel oil consumption and storage requirements. This regulatory guide endorses ANSI Standard N195-1976, which recommends that on-site fuel oil storage capacity be sufficient to operate the minimum number of diesel generators following the limiting design basis accident for either seven days or the time required to replenish the oil from sources outside the plant site without interrupting the operation of the diesel, whichever is longer. The evaluation is based on the time dependence of diesel loads during the design basis event or, as a conservative alternative, it is based on continuous diesel operation at rated capacity for seven days. In the event that the time dependent load method is used, a minimum margin of 10% is to be added to the fuel oil requirement. Note that for SGS, the minimum number of diesels for a design basis accident is two.

### **SGS FUEL OIL STORAGE EVALUATION**

PSE&G initiated an effort to review the as-built capability of the diesel fuel oil storage systems. This effort determined a bounding value of fuel oil consumption as a function of EDG load, the usable DFOST volume, and the duration of EDG operation supported by the DFOST at various tank levels. The design basis event for DFOST capability is a Loss of Coolant Accident (LOCA) with Loss of Offsite Power (LOOP) and two diesels operating.

## **Fuel Oil Consumption Rate**

At PSE&G's request, the diesel generator manufacturer (Alco) performed an analysis to establish the specific fuel consumption rates for each EDG under Salem-specific design basis loading conditions. The loading conditions were based on the profiles generated by the Salem EDG load calculation which was reviewed by the NRC during the Electrical Distribution System Functional Inspection (EDSFI, ref: Inspection Report 50-272/93-82; 50-311/93-82, dated November 30, 1993).

The worst case specific fuel consumption rate from the original factory tests of the Salem diesel generators were used as a starting point in Alco's analysis. A review of the following parameters which could potentially affect fuel consumption was performed: major component changes, lube oil and jacket water temperature, generator efficiency, barometric pressure, humidity, intake air temperature, exhaust backpressure, maintenance and operating history, transient versus steady-state loading, and fuel density. Fuel density, which is commonly correlated with heating value by industry (e.g., Diesel Engine Manufacturers Association), is used to ensure that an appropriate heating value is reflected in the consumption calculation. This review shows that the only parameters with a significant potential impact on the Salem diesels' consumption rate relative to the factory test data are ambient intake air temperature and the uncertainties associated with transient (approximately the first minute) loading.

A 3% margin was added to the worst case specific fuel consumption rate to account for the combined effects of the above parameters. This margin is consistent with Alco's recommendation based on extensive field experience with diesel engines similar to those used at Salem (Model 251 engine), and it envelopes operation at outside ambient air temperatures up to 120 degrees Fahrenheit.

## **Usable Volume**

An evaluation was performed to determine the usable volume provided by the Diesel Fuel Oil Storage Tanks at selected tank levels. The total usable volume per tank is approximately 29,200 gallons. Fuel oil level measurement uncertainty is considered in determining the usable volume as a function of indicated level. In the vicinity of the tank level corresponding to the proposed TS volume, level measurement uncertainty accounts for approximately 1300 gallons of fuel oil.

Fuel oil contained in the day tanks was not included in the calculation of available fuel oil volume. This is a conservative assumption because the day tanks are normally maintained with greater than a one hour supply of fuel oil. With two diesels operating, the inoperable diesel's day tank is assumed to fill from an initial volume of 130 gallons to the day tank capacity of

550 gallons. This results in an additional 420 gallons which is subtracted from the DFOST usable volume. This assumption is conservative because the day tank level is normally maintained higher than the Technical Specification limit.

The potential impact of vortexing was considered. The effects of vortexing are minimized by the system's physical configuration, including the use of low speed, self-priming positive displacement fuel oil transfer pumps, and pump suction centerline located well below the bottom of the DFOSTs. The conservatism associated with discounting the day tank volumes would more than offset any potential effects of vortexing.

Although SGS is not committed to Regulatory Guide 1.137 relative to fuel oil storage capacity, the calculation includes a 10% margin on the plant specific load profile fuel consumption requirements. PSE&G considers this margin to be very conservative because of the low degree of uncertainty associated with the revised fuel oil consumption rate and diesel load calculations.

#### **Basis For Proposed TS Value**

Based on the revised specific fuel consumption rate and load profiles for each diesel generator, the proposed TS 3.8.1.1.b.2 volume of 23,000 gallons per tank can support approximately 4½ days of operation for the limiting load condition associated with LOCA plus LOOP with two operable EDG's. The design basis limiting cases are LOOP/LOCA with the A and B diesel generators operating at Unit 1 and LOOP/LOCA with the A and C diesel generators operating in Unit 2. 4.5 days of operation in this scenario would require 21,985 gallons at Unit 1 and 22,553 gallons at Unit 2. Two diesels are the minimum required by the safety analyses, and are therefore used as the tank sizing basis consistent with ANSI N195 and Regulatory Guide 1.137. 23,000 gallons of fuel oil per DFOST is capable of supporting three diesels post-LOCA for 2.9 days. 23,000 gallons is proposed in order to increase the EDG operating time supported by the TS minimum volume, while providing for operating margin to allow for periodic diesel testing and to preclude overfilling the DFOSTs to satisfy the TS. The potential for overfilling is exacerbated by level measurement uncertainty (approximately 8 inches when protecting against an overflow condition) combined with the increasing rate of level change per unit of volume as the top of the tank is reached.

During operation in Mode 5, Cold Shutdown, and Mode 6, Refueling, minimum fuel oil volume requirements are lower than for operation in Modes 1 through 4. This is based on subcritical reactor core conditions and lower temperature operation, which reduce the potential demands on the Engineered Safety Features (ESF) systems supplied by the EDG's. The present TS 3.8.1.2.b.2 DFOST volume requirement for operation in Modes 5 and 6 is a combined volume of 20,000 gallons. The proposed change to TS 3.8.1.2.b.2 would

increase the Modes 5 and 6 minimum volume to 23,000 gallons, to be consistent with the proposed change to TS 3.8.1.1.b.2.

#### **METHODS FOR REFILLING THE DFOSTs**

Operating procedures identify three methods for refueling the DFOSTs: transfer from the 20,000 barrel Fuel Oil Storage Tank (FOST) using a Fuel Oil Forwarding Pump, transfer from the FOST using gravity feed, and transfer using the Emergency Truck Fill Connection. The preferred method is to transfer fuel oil from the FOST via installed transfer piping. This method is viable during loss of offsite power since the DFOSTs are located below the FOST allowing gravity feed. In the event the FOST transfer capability is not available, the emergency fill connections may allow fuel to be pumped or drained directly into the DFOSTs via an external connection. Fuel oil may be delivered from offsite sources via tanker truck or barge.

Fuel oil in the FOST and DFOSTs is periodically sampled and tested. No additional testing would be necessary prior to transfer from the FOST. For fuel delivered from offsite sources, testing is required prior to use, and must be considered when determining proper response times. Testing is performed by PSE&G's Maplewood Labs. Samples must be pulled from the tankers, but this could be readily performed onsite within a short period of time during an emergency, or at the time the fuel is loaded into the tankers at the off-site source to allow performance of the tests in parallel with the fuel delivery.

These alternate sources of fuel and the capability to refuel the EDG Fuel Oil Storage Tanks during diesel generator operation via one of the alternate methods ensures that the diesel generators can provide a reliable long term source of on-site power.

#### **Operations and Emergency Preparedness Procedures**

Emergency and Abnormal Operating Procedures, and Emergency Preparedness procedures have been reviewed to identify potential enhancements.

The abnormal operating procedure for severe weather requires initiation of actions to fill various outdoor tanks, including the FOST, upon indications of excessively high tide levels, to reduce tank buoyancy and maximize inventory. Site-specific meteorological data shows that the probability of loss of offsite power due to weather conditions is relatively low, as used in the basis for establishing a four-hour station blackout coping duration for SGS (Ref: NRC Supplemental SER dated May 13, 1994). As discussed in response to Hope Creek FSAR Question 430.88, which is applicable to SGS, severe weather conditions could interfere with the fuel oil deliveries for 24-36 hours, but site conditions preventing deliveries for as long as 5 days is not probable. The question response also discusses the availability

of multiple fuel oil suppliers and emergency response resources to ensure delivery. To provide additional assurance of adequate onsite inventory, the severe weather abnormal operating procedure is being revised to require increased inventory be maintained in the DFOST's in the event of indications of impending severe weather conditions.

The Emergency and Abnormal Operating Procedures for loss of power transients are being revised to include a step to initiate DFOST level verification and FOST transfer as required by the system operating procedures. This revision provides more definitive guidance for a practice that has been historically emphasized by operator training and station operating philosophy (i.e., use diesel operating logs and maintain DFOST level regardless of the reason for diesel operation). If the 20,000 barrel Fuel Oil Storage Tank and/or transfer piping cannot be used to supply fuel to the EDG Fuel Oil Storage Tanks, the Shift Supervisor would be notified so that arrangements for obtaining fuel from one of PSE&G's fuel oil vendors can be initiated by the emergency response team.

The Emergency Diesel Generator System Operating Procedures require operators to check the local level indication of the DFOSTs every 30 minutes for the first two hours of EDG operation, and hourly for operation beyond the first two hours. If plant conditions preclude checks from occurring at the prescribed frequency (e.g., radiological dose concerns or higher shift crew priorities), the Technical Support Center (TSC) and/or Emergency Operations Facility (EOF) may be relied upon to coordinate inventory and transfer capabilities.

Emergency plan implementing procedures are being revised to provide guidance to emergency response team personnel. In the event of long term diesel operation, the response team will determine whether the operating shift crew is verifying DFOST level and transferring from the FOST as needed. If it is not practical or possible for operations to implement the system operating procedures (e.g., hourly log readings), the response team will provide the necessary support to ensure a long term supply of fuel is provided. Response team support may include level verification and assessment of FOST status, procurement, sampling and transfer of fuel on an emergency basis, and field walkdowns and dose assessment to determine the accessibility of the DFOST rooms and access routes.

#### **IV. DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION**

The proposed changes for Salem Unit Nos. 1 and 2:

- (1) do not involve a significant increase in the probability or consequences of an accident previously evaluated.

Emergency Diesel Generator (EDG) fuel oil is used to support mitigation of design basis events involving loss of the preferred (offsite) source of A.C. power. Fuel oil storage capacity has no

effect on the probability of any accident previously evaluated.

Onsite fuel oil storage capability is designed to provide assurance of long term diesel operation to mitigate the consequences of a design basis accident. The proposed change would increase the minimum required volume in the Seismic Class I Diesel Fuel Oil Storage Tanks (DFOSTs), and would revise the Updated Final Safety Analysis Report (UFSAR), as part of an effort to reconstitute the basis for SGS fuel oil storage capacity. The DFOST inventory at the proposed minimum Technical Specification (TS) limit, combined with the emergency fill connection and Seismic Class III Fuel Oil Storage Tank and transfer capability, would continue to provide a long term onsite fuel oil supply to the EDGs. Operations and Emergency Preparedness procedures would facilitate the transfer of fuel oil, and procurement from offsite sources as a contingency measure. Therefore, the ability to provide a long term supply of fuel oil to the EDG's is maintained, and the proposed change would not result in any significant increase in consequences of an accident previously evaluated.

- (2) do not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change would increase the minimum DFOST level required by TS, and redefines the fuel oil storage and transfer systems' capability based on plant specific fuel oil consumption rate and EDG load profiles. These changes would not result in operation in any configuration prohibited by the present TS, and do not introduce the possibility of any new type of accident.

- (3) do not involve a significant reduction in a margin of safety.

The EDG fuel oil storage and transfer capability would continue to support reliable, long term EDG operation, thereby maintaining an acceptable margin of safety relative to the ability of onsite A.C. power to support operation of equipment important to safety. The proposed changes do not involve a significant reduction in margin of safety.

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

NLR-N94099

ATTACHMENT 2

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION  
=====

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Three separate and independent diesel generators with:
  1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
  2. A common fuel storage system consisting of two storage tanks, each containing a minimum volume of ~~20,000~~ 23,000 gallons of fuel, and two fuel transfer pumps.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With an independent A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and demonstrate OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours; restore the inoperable independent A.C. circuit 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.
- 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 preventive maintenance, the two remaining OPERABLE diesel generators need not be tested. If the diesel generator is inoperable for any reason other than preventive maintenance, 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.

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION

=====

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Two separate and independent diesel generators with:
  - 1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
  - 2. A common fuel storage system containing a minimum volume of ~~20,000~~ 23,000 gallons of fuel, and
  - 3. A fuel transfer pump.

23,000

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

=====

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 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.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

=====

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Three separate and independent diesel generators with:
  1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
  2. A common fuel storage system consisting of two storage tanks, each containing a minimum volume of ~~20,000~~ gallons of fuel, and two fuel transfer pumps.

↑  
23,000

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With an independent A.C. circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and demonstrate OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours; restore the inoperable independent A.C. circuit 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.
- 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 preventive maintenance, the two remaining OPERABLE diesel generators need not be tested. If the diesel generator is inoperable for any reason other than preventive maintenance, 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.

ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION  
=====

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and
- b. Two separate and independent diesel generators with:
  1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and
  2. A common fuel storage system containing a minimum volume of ~~20,000~~ 23,000 gallons of fuel, and
  3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS  
=====

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 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.