ATTACHMENT A

EXISTING SPECIFICATION - UNIT 2

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 23 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm at least once per 12 hours.

#The shutdown cooling train may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor pressure vessel flange as soon as possible.

b. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm at least once per 12 hours.

ATTACHMENT B

EXISTING SPECIFICATION - UNIT 3

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 23 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm at least once per 12 hours.

#The shutdown cooling train may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

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LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.#

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor pressure vessel flange as soon as possible.

b. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm at least once per 12 hours.

Both shutdown cooling trains may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs provided all operations involving a reduction in boron concentration of the RCS are suspended.

ATTACHMENT C

PROPOSED SPECIFICATION - UNIT 2

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.#

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 23 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

#The shutdown cooling train may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor pressure vessel flange as soon as possible.

b. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmopnere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200gpm at least once per 12 hours.

ATTACHMENT D

PROPOSED SPECIFICATION - UNIT 3

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one shutdown cooling train shall be OPERABLE and in operation.[#]

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is greater than or equal to 23 feet.

ACTION:

With no shutdown cooling train OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

[#]The shutdown cooling train may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent shutdown cooling trains shall be OPERABLE and at least one shutdown cooling train shall be in operation.#

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

a. With less than the required shutdown cooling trains OPERABLE, immediately initiate corrective action to return the required shutdown cooling trains to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor pressure vessel flange as soon as possible.

b. With no shutdown cooling train in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling train to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2200 gpm at least once per 12 hours.

Both shutdown cooling trains may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs provided all operations involving a reduction in boron concentration of the RCS are suspended.

Description of Proposed Change NPF-10/5-192, Rev 6
and Safety Analysis

This is a request to revise Technical Specification Section 3/4.8.1.1 Electrical Power Systems, A.C. Sources of the Technical Specifications for the San Onofre Nuclear Generation Station Units 2 and 3.

Existing Technical Specifications

Unit 2: See Attachment A
Unit 3: See Attachment C

Proposed Technical Specifications

Unit 2: See Attachment B
Unit 3: See Attachment D

Description

The proposed change revises Technical Specification 3/4.8.1.1 "Electrical Power Systems, AC Sources" to reduce the required number of fast cold start surveillance tests for diesel generators. The proposed change also modifies diesel fuel oil testing requirements to more accurately determine the quality of the diesel fuel oil.

The purpose of Technical Specification 3/4.8.1.1 is to ensure that sufficient power will be available to supply the safety related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The proposed change to the Technical Specification consists of the following parts:

(a) Technical Specification 3.8.1.1.a currently requires two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system. The proposed change would require two physically independent circuits between the offsite transmission network and each Class 1E 4kV bus. This change would also require that the following Action Statement "a" be entered on a bus by bus basis. The proposed change would also modify Technical Specification 4.8.1.1.1 to be consistent with T.S. 3.8.1.1.a. This would remove the existing requirement for cold start testing of a diesel generator on an unaffected bus, reducing the number of fast cold start tests of the diesel generators. This change is consistent with the intent of NRC Generic Letter 84-15.

For Modes 1, 2, 3 and 4, existing Technical Specification 3.8.1.1 requires that if a diesel generator has become inoperable, it be restored to operable status within 72 hours or the plant be brought to cold shutdown within the next 36 hours. However, the existing Technical Specifications do not provide any limit on the frequency of diesel inoperability or the total number of days lost due to inoperability over a given period of time.

Consistent with Generic Letter 84-15, this proposed change provides a limit of 800 hours on the combined out of service time available to the two diesel generators in one year (365 consecutive days). Should additional time be needed in a specific situation, the proposed change requires that the NRC be notified of the circumstances. Having thus established a minimum availability goal, this proposed change then, consistent with Generic Letter 84-15, increases the existing 72 hour individual out of service limit to 7 days (168 hours), thereby permitting greater flexibility in handling diesel generator malfunction and/or servicing needs without recourse to plant shutdown. Both of these proposed limits are considered applicable to Modes 1, 2, 3 and 4 only. The 800 hour annual limit is based on the following:

Assuming a reliability of 0.95 per diesel engine and 50 starts per year (365 consecutive days) per engine,

Number of failures per year per engine = $0.05 \times 50 = 2.5$.

Assuming 3 days average repair time required per failure,

Total time lost per diesel per year due to failure
= 7.5 days

Assuming an average of 4 days lost per quarter per diesel for preventive maintenance (PM) and/or contingencies,

Time lost per year per diesel due to PM and/or contingencies
= 16 days
Total time lost per year per diesel = 16 days + 7.5
24 days (approx.)

Total time lost per year for 2 diesels = 48 days = 1152 hours

Assuming that the plant has operated in Modes 1, 2, 3 and/or 4 for 70% of the time (365 days), total time lost per year in Modes 1, 2, 3 and/or 4 = $1152 \times 0.70 = 800$ hours (approx.).

(b) Technical Specification 3.8.1.1 Action Statements (a) and (b) require the diesel generators to be demonstrated operable by fast cold start testing within one hour and once per 8 hours thereafter when either one offsite A.C. circuit and/or diesel generator is

inoperable. This proposed change would reduce the number of diesel generator fast cold start tests by requiring only one test of the diesel generators within 24 hours when one diesel generator or one offsite AC circuit is inoperable. This change is consistent with the intent of NRC Generic Letter 84-15.

(c) Technical Specification 3.8.1.1 Action Statement (d) requires that with two offsite AC sources inoperable, two diesel generators must be demonstrated operable by fast cold start testing within one hour and once per 8 hours thereafter. The proposed change would modify this action statement by requiring the two diesel generators to be verified operable by start testing within 8 hours unless the diesels are already operating. This reduces the number of fast cold start tests of the diesel generators consistent with the intent of NRC Generic Letter 84-15.

(d) Technical Specification 4.8.1.1.2.a.4 currently requires the diesel generators to be verified operable by fast cold start testing in accordance with the frequency specified in Table 4.8.1. This testing requires the diesel generators to start from ambient condition and accelerate to 900 rpm in less than or equal to 10 seconds. Additionally, the generator voltage and frequency are required to be at 4,360 $\pm$ 436 volts and 60 $\pm$ 1.2 Hz within 10 seconds. The proposed change requires a fast cold start from ambient conditions only once per 18 months. For all other surveillance starts, the proposed change would allow the diesel generators to be started in accordance with the manufacturers recommendations regarding engine prelube and warmup procedures and allow the diesel generator to be gradually loaded. The proposed change would also specify that the diesel generators are to be started for the purpose of surveillance testing by the following signals only: (1) manual, (2) simulated loss of offsite power by itself and (3) simulated loss of offsite power in conjunction with an ESF actuation test signal. This change is consistent with the intent of NRC Generic Letter 84-15.

(e) Technical Specification Table 4.8-1 prescribes the test frequency for diesel generators based on the number of failures in the last 100 valid tests. The proposed change would revise the diesel generator test base from the last 100 valid demands to the last 20 valid demands. The proposed change would also delete the last two tiers of test frequency reducing the most frequent diesel generator testing from 3 days to 14 days. Fourteen days is used in place of 7 days as recommended by NRC Generic Letter 84-15 because this doubles the testing frequency from 30 days to 14 days when the

failure rate doubles from 1 failure to 2 failures in the last 20 valid diesel generator tests. This change is consistent with the intent of Generic Letter 84-15 as it reduces the number of diesel generator fast cold starts.

(f) Technical Specification 4.8.1.1.2.c requires that diesel fuel oil be tested for water and sediment content, viscosity, and insolubles once every 92 days and from new fuel prior to addition to the fuel storage tanks. The proposed change would upgrade the testing methods to be consistent with current industry practice and would replace the current test for insolubles with a more accurate and effective test. The basis for these changes are as follows:

(1) Fuels in storage should be tested periodically to detect degradation. Only those parameters that can change during storage need to be tested.

(2) Periodic testing for particulates formed in storage should concentrate on the actual particulate contamination. The accelerated oxidation stability test (ASTM D2274-70) is currently required to be performed for new fuel and every 92 days for stored fuel. This test provides a rough prediction of the tendency of the fuel to oxidize and form particulates during storage. It does not indicate actual particulate contamination. In addition, ASTM D975-81 states "Correlations (of Model D2274 results) with fuel suitability are tenuous." Finally, the ASTM D2274-70 test involves significant costs and a significant administrative burden.

In lieu of the accelerated oxidation stability test, a test for actual particulate contamination, ASTM D2276-83, is proposed. This test would be performed every 92 days for fuel in storage. Since formation of particulates during storage at ambient temperatures (Note that San Onofre Units 2 and 3 storage tanks are underground) is a relatively slow process, the 92 day test will ensure early detection of particulates.

Additionally, the proposed change would replace the fuel sampling standard, ASTM D270-1975, with ASTM D4057-81 and replace ASTM D975-77 with D975-81 as these standards are the current revisions of the standards in industry use.

The petroleum industry manufactures diesel fuel to ASTM D975 specifications. Although distribution methods frequently preclude the supplier from providing a certificate of compliance, a low risk of having non-compliant fuel added to the diesel fuel oil storage can be obtained by testing the fuel before addition to the storage tank with a program designed to disclose fuel contamination which might have taken place during the transmission and distribution process. The water and sediment test and the kinematic viscosity test will ensure that the new fuel is clean diesel fuel oil.

(g) This proposed change would modify the Technical Specification Bases to be consistent with the proposed configuration of the diesel generator systems.

NRC Generic Letter 84-15 contains several recommendations to improve and maintain the reliability of the emergency diesel generators, which, as noted in the generic letter, is one of the main factors affecting the risk from station blackout. One of the recommendations is to reduce excessive testing which causes incremental wear and degradation of the diesel engines. To accomplish this, Generic Letter 84-15 provides an example of an acceptable Technical Specification (TS). Consistent with this example TS, the changes described in (a), (b), (c), (d) and (e) above would eliminate all repetitive action statement and surveillance starts of the diesel generators except the initial start to verify the operability of the remaining diesel generator(s). These proposed changes do not affect the surveillance requirements pertaining to the offsite circuits. The change described in (f) above provides for replacing a fuel oil test with a test that is more effective in detecting unsatisfactory fuel thus increasing the reliability of the diesel generators. The change described in (g) above provides for consistency between the proposed plant configuration and the bases.

Safety Analysis

The proposed changes discussed above will be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

1. Will operation of the facility in accordance with these proposed changes involve a significant increase in the probability or consequences of any accident previously evaluated?

   Response: No

   (a) Surveillance Starts

   As noted under Description, this proposed change affects only the surveillance requirements pertaining to the diesels and not those pertaining to the offsite circuits. Upon loss of required AC power, only one surveillance start is deemed necessary to confirm the operability of a diesel generator. By eliminating the repeat diesel surveillance starts as presently required at $\leq$ 8 hour intervals, this proposed change will prevent premature diesel engine degradation and contribute to enhanced plant safety over the long term. Whereas the existing Technical Specifications require demonstration of diesel generator operability within one hour of the initial power loss, this proposed change permits a delay of up to 24 hours after losing one source and 8 hours after losing two sources. These new time limits conform to Generic Letter 84-15 and are consistent with the philosophy to minimize wear on the diesel engine parts. These limits will permit the inoperable power source(s) to be repaired and restored if possible while avoiding an unscheduled

diesel start. Although the new limits are a relaxation from the existing surveillance requirements, it is not considered a significant relaxation, in light of the requirement to test the offsite circuits within 1 hour of the initial power loss and every 8 hours thereafter for the duration of the loss. If the inoperable power source cannot be restored to service within the specified time interval, the Technical Specifications require plant shutdown within the next 36 hours.

By emphasizing both long term diesel reliability and immediate plant safety requirements under different loss situations, a decrease in the probability or consequences of an accident is obtained.

(b) Out of Service Time Limits

Increasing the individual out of service limit from 72 hours to 7 days does not involve a significant increase in the probability or consequences of an accident previously evaluated, considering that

1. The safety requirement to be in cold shutdown within 36 hours if the out-of-service limit has been exceeded and the inoperable power source remains inoperable is unchanged. (In practice, it takes only about 12 hours to achieve cold shutdown from Mode 1 temperature conditions.)

2. The annual limit will insure that the actual out-of-service time is in all cases within reasonable limits and unnecessary diesel out of service time is avoided.

3. In the history of San Onofre Units 2 and 3, the switchyard has never been completely de-energized. Presently, eight offsite transmission circuits serve San Onofre, whereas only two circuits are required by the Technical Specifications.

The proposed 800 hour limit on the total annually allowed diesel out of service time in Modes 1, 2, 3 and 4 instead of an unlimited number of 72 hour outages currently allowed will serve as an incentive in scheduling and completing all diesel maintenance in such a manner that diesel availability remains high. If downtime in excess of the 800 hour limit is needed, the Technical Specifications require notification to the NRC instead of requiring plant shutdown. This provision is based on the recognition that exceeding the 800 hour limit in itself does not represent an unsafe condition but each individual case should be evaluated in the light of all the relevant factors and concerns. Based on the above, it is concluded that the introduction of an 800 hour annual out of service limit will not result in the probability or consequences of an accident previously evaluated being increased.

(c) Basis to Technical Specification 3.8.1.1

The changes to the Basis are only for the purposes of updating and clarifying the text to be consistent with the proposed configuration of the diesel generator systems.

(d) Diesel Fuel Oil Testing Requirements

By substituting the current diesel fuel oil testing requirements with those that are in current industry use and that more accurately determine fuel oil quality, the probability of degraded fuel is reduced. Therefore, the probability or consequences of previously evaluated accidents are not increased.

2. Will operation of the facility in accordance with the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   These proposed changes do not change the configuration of the plant, or its manner of operation but rather, for sake of prolonging diesel engine life and providing better diesel maintenance, these changes reduce the amount of diesel testing and increase the time allowed for diesel repair and maintenance in individual cases. The safety requirement to complete cold shutdown within 36 hours if a limiting condition for operation is not met remains in place. Based on these considerations, these proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3. Will operation of the facility in accordance with these proposed changes involve a significant reduction in a margin of safety?

   Response: No

   The proposed changes affect only the surveillance requirements requiring fast cold starts of the diesel engines and fuel oil testing. The proposed changes will reduce premature diesel engine degradation and increase assurance of fuel oil quality and thus increase the overall reliability of the diesel generators. Therefore, operation in accordance with these proposed changes will not involve a reduction in a margin of safety.

The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870) of amendments that are considered not likely to involve a significant hazards consideration. Example (i) relates to a change that is purely administrative in nature, for example, a change to achieve consistency throughout the technical specifications, correction of an error, or a change in nomenclature. Example (vi) relates to a change that may

result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from a small refinement of a previously used calculational model or design method. The proposed changes described in part a, b, c, d and e above are representative of Example (vii) in that they are provided in response to NRC Generic Letter 84-15 and involves only a reduction of repeated fast cold starts of diesel generators following the initial start. The proposed change described in part (f) above is representative of Example (vi) in that it replaces the current fuel oil oxidation stability test with a test for fuel oil particulates. The proposed change described in part (g) above is representative of Example I in that the proposed change is for maintaining consistency throughout the technical specifications.

Safety and Significant Hazards Determination

Based on the above Safety Analysis it is concluded that: (1) the proposed changes do not involve a significant hazards consideration as defined by 10 CFR 50.92; (2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed changes; and (3) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

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ATTACHMENT A

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 circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel,

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators 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 offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable in addition to ACTION a or b above, verify that:

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

ACTION (Continued)

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 14 hours or be in at leat HOT STANDBY within the next 6 hours. With only one offsite source following 30 hours.

e. With two of the above required diesel generators inoperable, demonstrate the OPERABLE of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 3A0416 or 3A0603 are used to provide the second source of power, the following busses are required.

for 3A0416	for 3A0603
3A04	3A06
3B04	3B06
3D1	3D2

SEP 25 1985

SURVEILLANCE REQUIREMENTS (Continued)

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,
2. Verifying the fuel level in the fuel storage tank,
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using the manual start signal.
5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kw in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kw for at least an additional 60 minutes, and
6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

d. At least once per 18 months during shutdown by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 6.0 Hz.

3. Verifying the generator capability to reject a load of 4000 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

4. Simulating a loss of offsite power by itself, and:

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

6. Deleted.

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz during this test.

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c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low lube oil pressure, are automatically bypassed.

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz for the first two hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.4b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.

10. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

SURVEILLANCE REQUIREMENTS (Continued)

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In Last 100 Valid Tests.*	Test Frequency
≤ 1	At least once per 31 days
2	At least once per 14 days
3	At least once per 7 days
≥ 4	At least once per 3 days

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purposes of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests". Entry into this test schedule shall be made at the 31 day test frequency.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

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 safety analyses and are based upon maintaining at least one redundant set of 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 other onsite A.C. source. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements verify the OPERABILITY of the required independent circuits between the offsite transmission network and the onsite Class 1E distribution system. Two independent circuits are required in Modes 1 through 4. One source of power is supplied from Unit 2 itself and is normally provided through the Reserve Auxiliary Transformers (2XR1 and 2XR2). If the Unit 2 main generator iso phase bus links are removed, then the Unit Auxiliary Transformer 2XU1 can be used in place of 2XR1 and/or 2XR2. The second source of power is provided through the Unit 3 Reserve Auxiliary Transformers (3XR1 and 3XR2) and/or, with the Unit 3 generator iso phase bus links removed, the Unit 3 Unit Auxiliary Transformer (3XU1).

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-0270-1975. However, ASTM-0270-1965 was reverified in 1975 rather than re-issued. The reverified 1965 standard is therefore the approproate standard to be used.

Additionally, Regulatory Guide 1.9 allows loading of the diesel generator to its 2000 hour rating in an accident situation. The full load, continuous operation rating for each diesel generator is 4700 kW, while the calculated accident loading in Modes 1 through 4 is 4000 kW. The largest anticipated load (including loads which are required to mitigate the consequences of a design basis accident or facilitate plant operation and maintenance) in Modes 5 and 6 is calculated to be less than 80% of the full rated capacity. No 2000 hour loading has been specified by the diesel generator manufacturer and, as a result the full loading rating of 4700 kW is conservatively established as the 2000 hour rating. Diesel frequency droop restrictions are established due to HPSI flow rate considerations.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery thermal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

ATTACHMENT 8

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

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

a. Two physically independent circuits between the offsite transmission network and each Class 1E 4 kV Bus, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source(s) by performing, for each affected 4 kV Bus, Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 7 days** or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once

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* Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

** The aggregate of the combined out of service times for the two diesel generators (exclusive of plant operation in Modes 5 and 6) during any consecutive 365 day period shall not exceed 800 hours without notification to the NRC. A diesel generator shall be considered to be out of service (inoperable) from the time of the initial loss until it satisfies Surveillance Requirement 4.8.1.1.2.a.4.

ACTION (Continued)

per 8 hours thereafter and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 7 days** from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable, in addition to ACTION a or b above, verify that;

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating.* Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 7 days from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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* Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 $\pm$ 436 volts and 60 $\pm$ 1.2 Hz.

** The aggregate of the combined out of service times for the two diesel generators (exclusive of plant operation in Modes 5 and 6) during any consecutive 365 day period shall not exceed 800 hours without notification to the NRC. A diesel generator shall be considered to be out of service (inoperable) from the time of the initial loss until it satisfies Surveillance Requirement 4.8.1.1.2.a.4.

ACTION (Continued)

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 7 days** from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

** The aggregate of the combined out of service times for the two diesel generators (exclusive of plant operation in Modes 5 and 6) during any consecutive 365 day period shall not exceed 800 hours without notification to the NRC. A diesel generator shall be considered to be out of service (inoperable) from the time of the initial loss until it satisfies Surveillance Requirement 4.8.1.1.2.a.4.

ACTION (Continued)

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and each Class 1E 4 kV Bus shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 3A0416 or 3A0603 are used to provide a source of power, the following buses are required.

for 3A0416	for 3A0603
3A04	3A06
3B04	3B06
3D1	3D2

b. Demonstrated OPERABLE at least once per 18 months by transferring (manually and automatically) each Class 1E 4 kV Bus from its normal offsite power source to its alternate offsite power source.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,

2. Verifying the fuel level in the fuel storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,

4. Verifying the diesel generator starts from ambient conditions and accelerates to at least 900 rpm.* The generator voltage and frequency shall be 4360 $\pm$ 436 volts and 60 $\pm$ 1.2 Hz after reaching 900 rpm. The diesel generator shall be started for this test by using one of the following signals:

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*A diesel generator start (in less than 10 seconds) from ambient conditions shall be performed at least once per 18 months. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

a) Manual
b) Simulated loss of offsite power by itself
c) Simulated loss of offsite power in conjunction with an ESF actuation test signal

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kW in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kW for at least an additional 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c.1. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.

2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10 mg/liter when checked in accordance with ASTM D2276-83.

d. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 $\pm$ 436 volts and frequency at 60 $\pm$ 6.0 Hz.

3. Verifying the generator capability to reject a load of 4700 kw without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal, without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

6. Deleted

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 +1.2/-0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low-low lube oil pressure, are automatically bypassed.

A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

Unit 3 main generator iso phase bus links are removed, then the Unit Auxiliary Transformer 3XU1 can be used in place of 3XR1 and/or 3XR2. The second source of power is provided through the Unit 2 Reserve Auxiliary Transformers (2XR1 and 2XR2) and/or, with the Unit 2 generator iso phase bus links removed, the Unit 2 Unit Auxiliary Transformer (2XU1).

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979 and NRC Generic Letter 84-15. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-D270-1975. However, ASTM-D270-1975 and ASTM D975-77 have been replaced by ASTM 4057-81 and ASTM D975-81, respectively, as the current revision of the standards in industry use. Also, the accelerated oxidation stability test (ASTM D2274-70) is replaced by a test for actual particulate contamination, ASTM D2276-83.

Additionally, Regulatory Guide 1.9 allows loading of the diesel generator to its 2000 hour rating in an accident situation. The full load, continuous operation rating for each diesel generator is 4700 kw, while the calculated accident loading in Modes 1 through 4 is 4000 kw. The largest anticipated load (including loads which are required to mitigate the consequences of a design basis accident or facilitate plant operation and maintenance) in Modes 5 and 6 is calculated to be less than 80% of the full rated capacity. No 2000 hour loading has been specified by the diesel generator manufacturer and, as a result the full loading rating of 4700 kw is conservatively established as the 2000 hour rating. Diesel frequency droop restrictions are established due to HPSI flow rate considertions.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

CEW:5966F

SURVEILLANCE REQUIREMENTS (Continued)

a) Manual
b) Simulated loss of offsite power by itself
c) Simulated loss of offsite power in conjunction with an ESF actuation test signal

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kW in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kW for at least an additional 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c.1. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.

2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10 mg/liter when checked in accordance with ASTM D2276-83.

d. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 $\pm$ 436 volts and frequency at 60 $\pm$ 6.0 Hz.

3. Verifying the generator capability to reject a load of 4700 kw without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal, without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

6. Deleted

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 +1.2/-0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low-low lube oil pressure, are automatically bypassed.

SURVEILLANCE REQUIREMENTS (Continued)

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 Kw. The generator voltage and frequency shall be 4360 ± 436 Volts and 60 ± 1.2 Hz after the start* signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 Volts and 60 + 1.2/-0.3 Hz for the first 2 hours of this test and 4360 ± 436 Volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

    b) Transfer its loads to the offsite power source, and

    c) Be restored to its standby status.

11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

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* The engine start for the purpose of this surveillance test may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

CEW:5706F

Table 4.8.1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Test Frequency
≤ 1	At least once per 31 days
≥ 2	At least once per 14 days**

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

** This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

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 safety analyses and are based upon maintaining at least one redundant set of 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 other onsite A.C. source. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974 and on Nuclear Regulatory Commission's generic letter 84-15. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains , components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements to verify OPERABILITY of the required independent circuits between the offsite transmission network and each Class 1E 4Kv bus. Two independent circuits are required in Modes 1 through 4. One source of power is supplied from Unit 2 itself and is normally provided through the Reserve Auxiliary Transformers (2XR1 and 2XR2). If the

A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

Unit 2 main generator iso phase bus links are removed, then the Unit Auxiliary Transformer 2XU1 can be used in place of 2XR1 and/or 2XR2. The second source of power is provided through the Unit 3 Reserve Auxiliary Transformers (3XR1 and 3XR2) and/or, with the Unit 3 generator iso phase bus links removed, the Unit 3 Unit Auxiliary Transformer (3XU1).

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979 and NRC generic letter 84-15. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-D270-1975. However, ASTM-D270-1975 and ASTM D975-77 have been replaced by ASTM D4057-81 and ASTM D975-81, respectively, as the current versions of the standards in industry use. Also, the accelerated oxidation stability test (ASTM D2274-70) is replaced by a test for actual particulate contamination, ASTM D2276-83.

Additionally, Regulatory Guide 1.9 allows loading of the diesel generator to its 2000 hour rating in an accident situation. The full load, continuous operation rating for each diesel generator is 4700 kw, while the calculated accident loading in Modes 1 through 4 is 4000 kw. The largest anticipated load (including loads which are required to mitigate the consequences of a design basis accident or facilitate plant operation and maintenance) in Modes 5 and 6 is calculated to be less than 80% of the full rated capacity. No 2000 hour loading has been specified by the diesel generator manufacturer and, as a result the full loading rating of 4700 kw is conservatively established as the 2000 hour rating. Diesel frequency droop restrictions are established due to HPSI flow rate considertions.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

ATTACHMENT C

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 circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel,

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators 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 offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable in addition to ACTION a or b above, verify that:

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 2A0417 or 2A0619 are used to provide the second source of power, the following busses are required.

for 2A0417	for 2A0619
2A04	2A06
2B04	2B06
2D1	2D2

SEP 25 1985

SURVEILLANCE REQUIREMENTS (Continued)

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,
2. Verifying the fuel level in the fuel storage tank,
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using the manual start signal.
5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kw in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kw for at least an additional 60 minutes, and
6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-0270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-0975-77, and an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-02274-70.

d. At least once per 18 months during shutdown by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 6.0 Hz.

NOV 15 1982

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the generator capability to reject a load of 4700 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

4. Simulating a loss of offsite power by itself, and:

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and freqency shall be maintained within these limits during this test.

6. Deleted.

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz during this test.

NOV 22 '85

SURVEILLANCE REQUIREMENTS (Continued)

c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz for the first two hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.4b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.

10. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

NOV 15 1982

SURVEILLANCE REQUIREMENTS (Continued)

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

NOV 15 1982

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In Last 100 Valid Tests.*	Test Frequency
≤ 1	At least once per 31 days
2	At least once per 14 days
3	At least once per 7 days
≥ 4	At least once per 3 days

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purposes of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests". Entry into this test schedule shall be made at the 31 day test frequency.

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety-related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criterion 17 of Appendix "A" to 10 CFR 50.

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 is consistent with the initial condition assumptions of the safety analyses and is based upon maintaining at least one redundant set of 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 other onsite A.C. source. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out of service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements verify the OPERABILITY of the required independent circuits between the offsite transmission network and the onsite Class 1E distribution system. Two independent circuits are required in Modes 1 through 4. One source of power is supplied from Unit 3 itself and is normally provided through the Reserve Auxiliary Transformers (3XR1 and 3XR2). If the Unit 3 main generator iso phase bus links are removed, then the Unit Auxiliary Transformer 3XU1 can be used in place of 3XR1 and/or 3XR2. The second source of power is provided through the Unit 2 Reserve Auxiliary Transformers (2XR1 and 2XR2) and/or, with the Unit 2 generator iso phase bus links removed, the Unit 2 Unit Auxiliary Transformer (2XU1).

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-0270-1975. However, ASTM-0270-1965 was reverified in 1975 rather than re-issued. The reverified 1965 standard is therefore the appropreate standard to be used.

Additionally, Regulatory Guide 1.9 allows loading of the diesel generator to its 2000 hour rating in an accident situation. The full load, continuous operation rating for each diesel generator is 4700 kW, while the calculated accident loading in Modes 1 through 4 is 4000 kW. The largest anticipated load (including loads which are required to mitigate the consequences of a design basis accident or facilitate plant operation and maintenance) in Modes 5 and 6 is calculated to be less than 80% of the full rated capacity. No 2000 hour loading has been specified by the diesel generator manufacturer and, as a result the full loading rating of 4700 kW is conservatively established as the 2000 hour rating. Diesel frequency droop restrictions are established due to HPSI flow rate considerations.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery thermal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

Table 4.8-2 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and 0.15 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than .020 below the manufactuere's full charge specific gravity with an average specific gravity of all the connected cells not more than .010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8-2 is permitted for up to 7 days. During this 7-day period: (1) the allowable values for electrolyte level ensure no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than .020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than .040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.

The surveillance requirements applicable to lower voltage circuit breakers and fuses provide assurance of breaker and fuse reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker and/or fuse. Each manufacturer's molded case and metal case circuit breakers and/or fuses are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers and/or fuses are tested. If a wide variety exists within any manufacturer's brand of circuit breakers and/or fuses it is necessary to divide that manufacturer's breakers and/or fuses into groups and treat each group as a separate type of breaker or fuse for surveillance purposes.

The thermal overload protection contact integral with the motor starter of each valve listed in Table 3.8-2 is permanently bypassed in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves", November, 1975.

NOV 22 1985

ATTACHMENT D

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

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

a. Two physically independent circuits between the offsite transmission network and each Class 1E 4 kV Bus, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite source(s) by performing, for each affected 4 kV Bus, Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least two offsite circuits and two diesel generators to OPERABLE status within 7 days** or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. offsite sources by performing

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* Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 ± 436 volts and 60 ± 1.2 Hz.

** The aggregate of the combined out of service times for the two diesel generators (exclusive of plant operation in Modes 5 and 6) during any consecutive 365 day period shall not exceed 800 hours without notification to the NRC. A diesel generator shall be considered to be out of service (inoperable) from the time of the initial loss until it satisfies Surveillance Requirement 4.8.1.1.2.a.4.

ACTION (Continued)

Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours unless the diesel generator is already operating.* Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 7 days** from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable, in addition to ACTION a or b above, verify that;

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating.* Restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 7 days from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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* Note: A Diesel Generator is classified as "already operating" if the generator voltage and frequency are 4360 $\pm$ 436 volts and 60 $\pm$ 1.2 Hz.

** The aggregate of the combined out of service times for the two diesel generators (exclusive of plant operation in Modes 5 and 6) during any consecutive 365 day period shall not exceed 800 hours without notification to the NRC. A diesel generator shall be considered to be out of service (inoperable) from the time of the initial loss until it satisfies Surveillance Requirement 4.8.1.1.2.a.4.

ACTION (Continued)

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 7 days** from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

** The aggregate of the combined out of service times for the two diesel generators (exclusive of plant operation in Modes 5 and 6) during any consecutive 365 day period shall not exceed 800 hours without notification to the NRC. A diesel generator shall be considered to be out of service (inoperable) from the time of the initial loss until it satisfies Surveillance Requirement 4.8.1.1.2.a.4.

ACTION (Continued)

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and each Class 1E 4 kV Bus shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 2A0417 or 2A0619 are used to provide a source of power, the following buses are required.

for 2A0417	for 2A0619
2A04	2A06
2B04	2B06
2D1	2D2

b. Demonstrated OPERABLE at least once per 18 months by transferring (manually and automatically) each Class 1E 4 kV Bus from its normal offsite power source to its alternate offsite power source.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,

2. Verifying the fuel level in the fuel storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,

4. Verifying the diesel generator starts from ambient conditions and accelerates to at least 900 rpm.* The generator voltage and frequency shall be 4360 $\pm$ 436 volts and 60 $\pm$ 1.2 Hz after reaching 900 rpm. The diesel generator shall be started for this test by using one of the following signals:

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*A diesel generator start (in less than 10 seconds) from ambient conditions shall be performed at least once per 18 months. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

a) Manual
b) Simulated loss of offsite power by itself
c) Simulated loss of offsite power in conjunction with an ESF actuation test signal

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kW in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kW for at least an additional 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c.1. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D4057-81 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-81.

2. At least once every 92 days by obtaining a sample of fuel oil in accordance with ASTM-D4057-81 and verifying that particulate contamination is less than 10 mg/liter when checked in accordance with ASTM D2276-83.

d. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 $\pm$ 436 volts and frequency at 60 $\pm$ 6.0 Hz.

3. Verifying the generator capability to reject a load of 4700 kw without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

SURVEILLANCE REQUIREMENTS (Continued)

4. Simulating a loss of offsite power by itself, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal, without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

6. Deleted

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 +1.2/-0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential, and low-low lube oil pressure, are automatically bypassed.

SURVEILLANCE REQUIREMENTS (Continued)

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 Kw. The generator voltage and frequency shall be 4360 ± 436 Volts and 60 ± 1.2 Hz after the start* signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 Volts and 60 + 1.2/-0.3 Hz for the first 2 hours of this test and 4360 ± 436 Volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

    b) Transfer its loads to the offsite power source, and

    c) Be restored to its standby status.

11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

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* The engine start for the purpose of this surveillance test may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

CEW:5706F

Table 4.8.1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Test Frequency
≤ 1	At least once per 31 days
≥ 2	At least once per 14 days**

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

** This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

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 safety analyses and are based upon maintaining at least one redundant set of 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 other onsite A.C. source. The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974 and on Nuclear Regulatory Commission's generic letter 84-15. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains , components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements to verify OPERABILITY of the required independent circuits between the offsite transmission network and each Class 1E 4Kv bus. Two independent circuits are required in Modes 1 through 4. One source of power is supplied from Unit 3 itself and is normally provided through the Reserve Auxiliary Transformers (3XR1 and 3XR2). If the

Description of Proposed Changes NPF-10/15-215, Rev. 1 and Safety Analysis

This is a request to revise Technical Specification 3/4.8.1, "A.C. Sources."

Existing Technical Specifications

Unit 2: See Attachment A
Unit 3: See Attachment C

Proposed Technical Specifications

Unit 2: See Attachment B
Unit 3: See Attachment D

Description

The proposed change revises Technical Specification 3/4.8.1, "A.C. Sources." The proposed design change, Work Request 6094E, will add a Unit-to-Unit load transfer enable switch and modify the bus tie breaker controls. This switch will be selected to "OFF" when its associated diesel generator is operable and to "AUTO" when its diesel is inoperable. In Technical Specification 3/4.8.1., the definition of operable for diesel generators is changed to allow for one of the separate and independent diesel generators to be from the other unit if certain conditions are met.

Diesel generator operability is defined in existing Technical Specification 3/4.8.1.1 as two separate and independent dedicated diesel generators. Technical Specification 3/4.8.1.1 requires that if a diesel generator failure occurs or maintenance is required on one of the two diesel generators, the unit with the affected diesel generator must either complete repairs or maintenance within 72 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. The proposed changes to Technical Specification 3/4.8.1.1 would redefine operability for the diesel generators to permit one of the separate and independent diesel generators to be from the other (unaffected) unit, if certain conditions are met.

Currently, each load group for a unit has access to four sources of power, as described below:

- Source 1 - The preferred offsite feeds.
- Source 2 - Offsite power supplied through the other unit's feeder breakers and the unit-to-unit tie breakers.
- Source 3 - The load group's associated diesel generator.
- Source 4 - A third access to offsite power which can be supplied in approximately 12 hours.

A summary description of the automatic transfer capability that exists with the present design, between the emergency buses of each unit, is provided below. While only one load group (i.e., Unit 2 train A) is discussed here, as an example, similar operations will take place on the redundant load group in each unit.

The Unit 2 train A ESF bus normally is powered from the preferred offsite feeds identified above as source 1. If source 1 is lost, the Unit 2 train A ESF bus power source 2 would be initiated/attempted through the Unit 3 train A cross tie breakers. That is, if Unit 3 train A is being powered from its preferred offsite feeds, it would also power the Unit 2 train A ESF bus. However, if Unit 3 train A is either without power, or if it were being powered from its associated diesel generator, the Unit 2 train A bus is automatically prevented from receiving power from that source. While transfer to source 2 is being attempted, the loss of voltage signal (LOVS) of the Unit 2 train A bus would concurrently send a signal to the Unit 2 train A diesel generator to start.

Should the Unit 3 train A preferred power source not be available to power the Unit 2 train A bus, then the Unit 2 train A diesel generator will start and supply power from source 3 (approximately 10 seconds after the LOV signal has been initiated). Should the Unit 2 train A diesel generator not be available, then the train A ESF loads would be without power at that time (and until either the diesel generator is repaired, the offsite power is restored, or the unit is shutdown to make source 4 power available).

With the proposed design change, the same sequence of events described above for the existing system description would occur except that, with the transfer enable switch in "AUTO", the Unit 3 train A diesel generator would receive a start signal at the same time the Unit 2 train A diesel generator receives its start signal. The Unit 2 train A bus, then would be connected to and powered by the available Unit 3 train A diesel generator.

Therefore, with the proposed design change, should Unit 2 train A power source 3 be unavailable, then the Unit 3 train A diesel generator would be available as source 3. The Unit 3 diesel would then power both Unit 2 and Unit 3 train A loads.

It has been demonstrated that a single diesel generator is capable of simultaneously powering LOCA loads from one unit and safe shutdown loads from the second unit. Therefore, assuming the worst case single failure condition (i.e., loss of the Unit 3 train A diesel generator when the Unit 2 train A diesel generator is unavailable), all required loads would still be powered. That is, both Unit 2 and Unit 3 train B diesels would receive a start signal and would power their respective units' train B ESF loads.

Additionally, buses B04/B06 480 volt AC power is not required for operability of the tie breaker control circuitry. The tie breaker requires only 125 VDC power in order to operate. 125 VDC power operability is specified in Technical Specification 3/4.8.2. Battery 3D1/3D2 can be considered fully operable in accordance with its technical specification independent of the operability of bus B04/B06.

Safety Analysis

The proposed changes discussed above will be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

1. Will operation of the facility in accordance with these proposed changes involve a significant increase in the probability or consequences of any accident previously evaluated?

   Response: No

   In order to determine whether the proposed diesel generator cross-connect would increase the probability of occurrence of a previously evaluated accident or equipment malfunction, the proposed change was evaluated from the standpoint of whether it would decrease the ability of any structure, system, or component to prevent or mitigate the consequences of an accident or equipment malfunction. In order to accomplish the evaluation, a Failure Modes and Effects Analysis (FMEA) was performed. The results of the FMEA were compared with the previously performed FMEA for the emergency standby power system, as described in FSAR Table 8.3-8. The comparison evidenced no new failure modes and effects associated with implementation of the proposed diesel generator cross-connect which are not bounded by the existing FMEA for the emergency standby power system.

   Safety analyses and FMEAs contained in FSAR Chapters 6 and 15 were reviewed to determine which incidents relied on the emergency standby power system to prevent or mitigate the consequences of an accident. It should be noted that such reliance need not be a direct reliance on a diesel generator, but for example, might be a reliance on a HPSI pump for which power is supplied by the emergency standby power system. For the incidents described in FSAR Chapter 15, implementation of the proposed diesel generator cross-connect does not degrade or prevent actions described in the "Sequence of Event" tables, nor does implementation of the proposed diesel generator cross-connect bypass or cause to be bypassed any system design feature which would result in entry into an accident condition. This assessment is supported by the FMEA performed for the proposed design change. A review of FMEAs and design bases for engineered safety feature systems discussed in FSAR Chapter 6 did not identify any adverse impact on system operation or reliability as a result of the implementation of the proposed design change.

   A Standby Power Capacity Test has been conducted in order to verify that an emergency diesel generator could supply the "worst-case" accident loads of one train on one unit in addition to the "worst-case" shutdown loads for that train on the opposite unit. The test demonstrated that the total load for the first two hours

of such an event would remain below the two hour, 110 percent load rating of the diesel. Additionally, the diesel load would be reduced to the continuous rating (or below) within 2 hours after a dual-unit initiating transient due to the reduction in reactor decay heat and corresponding auxiliary feedwater flow.

The Technical Specification Limiting Condition for Operation specifies that each diesel generator have a separate fuel storage system containing a minimum volume of 47,000 gallons of fuel. A calculation was performed to conservatively calculate the fuel oil consumption of an emergency diesel generator for seven days of dual unit service. This service includes total loss of offsite power to both Units 2 and 3 and a loss of coolant accident (LOCA) in one unit. The calculation demonstrated that the worst case scenario resulted in a calculated minimum required fuel oil level less than the Technical Specification minimum of 47,000 gallons. Thus, the current fuel oil storage capacity and limits are adequate for shared unit service.

In addition to the review of safety analyses and FMEAs described in FSAR Chapters 15 and 16, the following major design, safety, regulatory, and analytical issues were considered in the safety evaluation to assure that the proposed diesel generator cross-connect does not adversely impact the conclusions reached regarding the potential for increased probability of occurrence of an accident or malfunction of equipment:

- Fire Protection
- Seismic II/I Considerations
- Equipment Qualification
- Security
- Pipe Break and Consequential Occurrances
- Radiological Consequences
- Single Failure Criterion
- Internally and Externally Generated Missiles
- Inservice Inspection Requirements
- Plant Communications Considerations
- Control Room/Containment Leakage
- Redundancy/Diversity
- Electrical Separation
- Isolation Requirements
- Human Factors
- Post Accident Access and Shielding
- Existing Licensing Commitments
- Toxic Gas Hazards
- Site Drainage/Flooding
- Compliance with 10 CFR 50, Appendix A, General Design Criteria

In summary, the probability of occurrence of an accident or malfunction of equipment important to safety previously evaluated in the FSAR will not be increased by implementation of the proposed diesel generator cross-connect.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed diesel generator cross-connect has been evaluated by performance of an FMEA. The most limiting failure mode identified in the FMEA results from the loss of one safety train in each unit. Due to the redundancy of the emergency standby power system and other engineered safety feature systems, one safety train would be available to prevent or mitigate the consequences of any accident. Since the plant is already analyzed for partial and total losses of power (whichever is the most limiting case, as defined in the FSAR), any power loss resulting from a failure of the proposed diesel generator cross-connect is bounded by existing safety analyses. Implementation of the proposed design change will not create the possibility of an accident or malfunction of equipment different than any previously evaluated in the SONGS Units 2 and 3 FSAR.

3. Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?

Response: No

Each of the bases associated with SONGS Units 2 and 3 Technical Specification 3/4.8 has been individually addressed below regarding the impact of implementation of the proposed diesel generator cross-connect.

- The proposed diesel generator cross-connect does not impact the capability of AC and DC power sources and associated distribution systems to supply power to safety related systems required for safe shutdown, mitigation, and control of accident conditions. The minimum specified independent and redundant AC and DC power sources and distribution systems continue to satisfy the requirements of 10 CFR 50; Appendix A, General Design Criterion 17.

- The operability of the emergency standby power system is consistent with the initial condition assumptions of the plant safety analyses. Implementation of the proposed design change will not result in a complete loss of safety function of critical systems during the period when one of the diesel generators is inoperable, assuming a loss of offsite power.

- The operability of AC and DC Power sources during shutdown and refueling has not been impacted. The plant can be maintained in the shutdown or refueling condition for extended periods of time, and sufficient instrumentation and control capability is available for monitoring and maintaining the status of each unit.

- The operability of the required independent circuits between the offsite transmission network and onsite Class 1E distribution system will continue to be verified. No changes will be made to these independent circuits as part of the proposed diesel generator cross-connect design change. Surveillance intervals remain unchanged.

- Although the actual surveillances will change, since the operability of additional components of the emergency standby power system will be verified once the proposed design change is implemented (i.e., the Unit 2 SIAS starting a Unit 3 diesel generator will be verified as will the operation of its associated transfer enable switch), the types of surveillances and frequency of these inspections will be consistent with the existing Technical Specification basis.

- The loading of the diesel generators during accident conditions may increase as a result of implementation of the proposed design change; however, the short-term and continuous loading of the diesel generators has been verified by test not to exceed the ratings established in the basis of the Technical Specification.

- The effectiveness and capability of the station batteries will not be impacted by implementation of the proposed design change.

- Limits established in the basis for the Technical Specification which ensure operability and capability of the station batteries will not be impacted by implementation of the proposed design change.

- Implementation of the proposed design change will not result in operation of a battery's cell parameters outside the normal limit, but within the allowable value specified in the Technical Specifications.

Based on the review of the bases of the Technical Specifications described above, implementation of the proposed diesel generator cross-connect will not result in a reduction in the margin of safety associated with the basis of any Technical Specification.

The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870) of amendments that are considered not likely to involve significant hazards considerations. Example (vi) relates to a change which either may result in some increase to the probability or consequences of a previously analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptance criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from the application of a refinement of a previously used calculational model or design method. This change does not make changes in analytical methods or results of analyses previously found to be acceptable by the NRC and used to demonstrate conformance with the regulations and is therefore acceptable.

Safety and Significant Hazards Determination

Based on the above Safety Analysis, it is concluded that: (1) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (2) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

BRD:5717F

ATTACHMENT A

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 circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel,

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators 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 offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable in addition to ACTION a or b above, verify that:

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

ACTION (Continued)

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 14 hours or be in at leat HOT STANDBY within the next 6 hours. With only one offsite source following 30 hours.

e. With two of the above required diesel generators inoperable, demonstrate the OPERABLE of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 3A0416 or 3A0603 are used to provide the second source of power, the following busses are required.

for 3A0416	for 3A0603
3A04	3A06
3B04	3B06
3D1	3D2

SEP 25 1985

SURVEILLANCE REQUIREMENTS (Continued)

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,
2. Verifying the fuel level in the fuel storage tank,
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using the manual start signal.
5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kw in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kw for at least an additional 60 minutes, and
6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

d. At least once per 18 months during shutdown by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 5.0 Hz.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the generator capability to reject a load of 4700 kw without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

4. Simulating a loss of offsite power by itself, and:

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and freqency shall be maintained within these limits during this test.

6. Deleted.

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz during this test.

SURVEILLANCE REQUIREMENTS (Continued)

c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz for the first two hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.4b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.

10. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

FEB 1 7 '88

SURVEILLANCE REQUIREMENTS (Continued)

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In Last 100 Valid Tests.*	Test Frequency
≤ 1	At least once per 31 days
2	At least once per 14 days
3	At least once per 7 days
≥ 4	At least once per 3 days

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guice 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purposes of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests". Entry into this test schedule shall be made at the 31 day test frequency.

AC SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following AC electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with:

1. Day fuel tanks containing a minimum volume of 325 gallons of fuel,

2. A fuel storage system containing a minimum volume of 37,600 gallons of fuel, and

3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum AC electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and movement of irradiated fuel, or operation of the fuel handling machine with loads over the fuel storage pool. In addition, when in MODE 5 with the Reactor Coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange, immediately initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2.1 The above required circuit between the offsite transmission network and the onsite Class 1E distribution system shall be determined OPERABLE at

NOV 22 1985

SURVEILLANCE REQUIREMENTS (continued)

least once per 7 days by verifying correct breaker alignment and indicated power availability.

a. If the above required offsite source is supplied through the Unit 3 4160 volt Emergency Bus #3A04, the following buses are required:

480 volt Emergency Bus #3B04
125 volt Emergency Bus #301

b. If the above required offsite source is supplied through the Unit 3 4160 volt Emergency Bus #3A06, the following buses are required:

480 volt Emergency Bus #3B06
125 volt Emergency Bus #302

4.8.1.2.2 The above required diesel generator shall be demonstrated OPERABLE by performing the Surveillance Requirements of 4.8.1.1.2 (except 4.8.1.1.2 a.5, d.5, d.7, d.9, d.10, d.11 and d.13) and 4.8.1.1.3.

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-0270-1975. However, ASTM-0270-1965 was reverified in 1975 rather than re-issued. The reverified 1965 standard is therefore the approproate standard to be used.

Additionally, Regulatory Guide 1.9 allows loading of the diesel generator to its 2000 hour rating in an accident situation. The full load, continuous operation rating for each diesel generator is 4700 kW, while the calculated accident loading in Modes 1 through 4 is 4000 kW. The largest anticipated load (including loads which are required to mitigate the consequences of a design basis accident or facilitate plant operation and maintenance) in Modes 5 and 6 is calculated to be less than 80% of the full rated capacity. No 2000 hour loading has been specified by the diesel generator manufacturer and, as a result the full loading rating of 4700 kW is conservatively established as the 2000 hour rating. Diesel frequency droop restrictions are established due to HPSI flow rate considerations.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery thermal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

ATTACHMENT B

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

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

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

One of the diesel generators may be in Unit 3 providing that the following conditions are met:

a. The two OPERABLE diesel generators are on different trains.

b. Both tie breakers are OPERABLE for the train that has the OPERABLE diesel in Unit 3.

c. The transfer enable circuit selected is OPERABLE and the transfer enable switch is selected to AUTO on the train with the INOPERABLE diesel generator.

d. The Unit 3 A.C. power sources are OPERABLE. (This requires both diesel generators in Unit 3 to be operable in Modes 1 through 4, or a single diesel generator to be operable if Unit 3 is in Mode 5 or 6.)

e. No more than one of the four Unit-to-Unit transfer enable switches may be in "AUTO."

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two

ACTION (Continued)

offsite circuits and two diesel generators 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 offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable in addition to ACTION a or b above, verify that:

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating, restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION (Continued)

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

If tie breakers 3A0416 or 3A0603 are used to provide a source of power, the following buses are required:

for 3A0416	for 3A0603
3A04	3A06
3D1	3D2

b. Demonstrated OPERABLE at least once per 18 months by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE#:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,

2. Verifying the fuel level in the fuel storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,

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#Values in parentheses "( )" specify acceptance criteria for unit transfer enable circuit to be demonstrated OPERABLE.

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using the manual start signal.

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 (5170) kW in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 (5170) kW for at least an additional 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

d. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject a load of greater than or equal to 655.7 (2600) kw while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 6.0 Hz in the speed control mode.

3. Verifying the generator capability to reject a load of 4700 (5170) kw without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

4. Simulating a loss of offsite power by itself, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

SURVEILLANCE REQUIREMENTS (Continued)

b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

6. Verifying the following for the Unit-to-Unit transfer Enable Circuit:

a) On an ESF test signal in Unit 2, without loss of offsite power, the Unit 3 diesel generator starts.

b) With a simulated loss of offsite power in both units in conjunction with an ESF test signal from either unit, and the Unit 2 Transfer Enable Switch in Auto:

1) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

2) Verifying the Unit 3 diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto connected emergency/accident loads from one unit and the safe shutdown loads from one unit through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the combined load. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2/-0.3 Hz during this test.

3) Verifying that with the diesel generator operating in the cross-connect mode, with an ESF test signal present from one unit, an ESF test signal from the second unit opens the Unit 2 tie breaker.

4) Verifying that with an ESF test signal present from both units, the Unit 2 tie breaker override will allow reclosure of the tie breaker.

SURVEILLANCE REQUIREMENTS (Continued)

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency/accident loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 +1.2/-0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 Kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 Volts and 60 + 1.2/-0.3 Hz for the first two hours of this test and 4360 ± 436 Volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 (5170) kw.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

    b) Transfer its loads to the offsite power source, and

    c) Be restored to its standby status.

SURVEILLANCE REQUIREMENTS (Continued)

11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal (from either unit, with the Unit 3 Transfer Enable Switch in Auto), overrides the test mode by returning the diesel generator to standby operation and automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

BRD:4611F

Table 4.8.1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Test Frequency
≤ 1	At least once per 31 days
2	At least once per 14 days
3	At least once per 7 days
≥ 4	At least once per 3 days

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purpose of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests." Entry into this test schedule shall be made at the 31 day test frequency.

ELECTRICAL POWER SYSTEMS

AC SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minumum, the following AC electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and one Class 1E 4 kV Bus, and

b. One diesel generator with:

1. Day fuel tanks containing a minimum volume of 325 gallons of fuel,

2. A fuel storage system containing a minimum volume of 37,600 (47,000)# gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum AC electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and movement of irradiated fuel, or operation of the fuel handling machine with loads over the fuel storage pool. In addition, when in MODE 5 with the Reactor Coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange, immediately initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2.1 The above required circuit between the offsite transmission network and the Class 1E 4 kV Bus shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

Value in paranthesis specify criteria for unit transfer enable circuit to be operable.

SURVEILLANCE REQUIREMENTS (continued)

If tie breakers 3A0416 or 3A0603 are used to provide a source of power, the following buses are required:

for 3A0416	for 3A0603
3A04	3A06
3D1	3D2

4.8.1.2.2 The above required diesel generator shall be demonstrated OPERABLE by performing the Surveillance Requirements of 4.8.1.1.2 (except 4.8.1.1.2 a.5, d.5, d.6, d.7, d.9, d.10, d.11 and d.13) and 4.8.1.1.3.

BASES

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guide 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-D270-1975. However, ASTM-D270-1965 was reverified in 1975 rather than re-issued. The reverified 1965 standard is therefore the appropriate standard to be used.

The Limiting Conditions for Operation permit continued unit operation if standby AC power is available from the two dedicated emergency diesel generators or from one dedicated diesel generator and from one shared diesel generator in Unit 3. The design of the diesel generator aligned for shared duty conforms with Regulatory Guide 1.81 (revision 1, January 1977) and is capable of automatically supplying power to the designed ESF loads in both units. An evaluation was performed using data from actual surveillance testing which determined that one diesel generator has the capacity to automatically supply AC power to one unit with loss of offsite power and the design basis accident concurrent with loss of offsite power on the other unit. Calculations in accordance with ANSI-N-195, confirm that 47,000 gallons of fuel oil is sufficient to supply a diesel in the shared mode.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery thermal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

ATTACHMENT C

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 circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel,

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits and two diesel generators 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 offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable in addition to ACTION a or b above, verify that:

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability.

If tie breakers 2A0417 or 2A0619 are used to provide the second source of power, the following busses are required.

for 2A0417	for 2A0619
2A04	2A06
2B04	2B06
2D1	2D2

SEP 25 1985

SURVEILLANCE REQUIREMENTS (Continued)

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,
2. Verifying the fuel level in the fuel storage tank,
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using the manual start signal.
5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 kw in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 kw for at least an additional 60 minutes, and
6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

d. At least once per 18 months during shutdown by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
2. Verifying the generator capability to reject a load of greater than or equal to 655.7 kw while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 6.0 Hz.

NOV 15 1982

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying the generator capability to reject a load of 4700 kW without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

4. Simulating a loss of offsite power by itself, and:

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and freqency shall be maintained within these limits during this test.

6. Deleted.

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto connected emergency (accident) loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz during this test.

c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kw. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained at 4360 ± 436 volts and 60 + 1.2/-0.3 Hz for the first two hours of this test and 4360 ± 436 volts and 60 ± 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.8.1.1.2.d.4b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 kw.

10. Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

11. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

NOV 15 1982

SURVEILLANCE REQUIREMENTS (Continued)

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

NOV 15 1982

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures In Last 100 Valid Tests.*	Test Frequency
≤ 1	At least once per 31 days
2	At least once per 14 days
3	At least once per 7 days
≥ 4	At least once per 3 days

* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purposes of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests". Entry into this test schedule shall be made at the 31 day test frequency.

AC SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following AC electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with:

1. Day fuel tanks containing a minimum volume of 325 gallons of fuel,

2. A fuel storage system containing a minimum volume of 37,600 gallons of fuel, and

3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum AC electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and movement of irradiated fuel, or operation of the fuel handling machine with loads over the fuel storage pool. In addition, when in MODE 5 with the Reactor Coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange, immediately initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2.1 The above required circuit between the offsite transmission network and the onsite Class 1E distribution system shall be determined OPERABLE at

SURVEILLANCE REQUIREMENTS (continued)

least once per 7 days by verifying correct breaker alignment and indicated power availability.

a. If the above required offsite source is supplied through the Unit 2 4160 volt Emergency Bus #2A04, the following buses are required:

480 volt Emergency Bus #2B04
125 volt Emergency Bus #2D1

b. If the above required offsite source is supplied through the Unit 2 4160 volt Emergency Bus #2A06, the following buses are required:

480 volt Emergency Bus #2B06
125 volt Emergency Bus #2D2

4.8.1.2.2 The above required diesel generator shall be demonstrated OPERABLE by performing the Surveillance Requirements of 4.8.1.1.2 (except 4.8.1.1.2 a.5, d.5, d.7, d.9, d.10, d.11 and d.13) and 4.8.1.1.3.

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-0270-1975. However, ASTM-0270-1965 was reverified in 1975 rather than re-issued. The reverified 1965 standard is therefore the approproate standard to be used.

Additionally, Regulatory Guide 1.9 allows loading of the diesel generator to its 2000 hour rating in an accident situation. The full load, continuous operation rating for each diesel generator is 4700 kW, while the calculated accident loading in Modes 1 through 4 is 4000 kW. The largest anticipated load (including loads which are required to mitigate the consequences of a design basis accident or facilitate plant operation and maintenance) in Modes 5 and 6 is calculated to be less than 80% of the full rated capacity. No 2000 hour loading has been specified by the diesel generator manufacturer and, as a result the full loading rating of 4700 kW is conservatively established as the 2000 hour rating. Diesel frequency droop restrictions are established due to HPSI flow rate considerations.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery thermal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

ATTACHMENT D

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITIONS FOR OPERATION

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

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. A day fuel tank containing a minimum volume of 325 gallons of fuel, and

2. A separate fuel storage system containing a minimum volume of 47,000 gallons of fuel, and

3. A separate fuel transfer pump.

One of the diesel generators may be in Unit 2 providing that the following conditions are met:

a. The two OPERABLE diesel generators are on different trains.

b. Both tie breakers are OPERABLE for the train that has the OPERABLE diesel in Unit 2.

c. The transfer enable circuit selected is OPERABLE and the transfer enable switch is selected to AUTO on the train with the INOPERABLE diesel generator.

d. The Unit 2 A.C. power sources are OPERABLE. (This requires both diesel generators in Unit 2 to be operable in Modes 1 through 4, or a single diesel generator to be operable if Unit 2 is in Mode 5 or 6.)

e. No more than one of the four Unit-to-Unit transfer enable switches may be in "AUTO."

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With either an offsite circuit or a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two

ACTION (Continued)

offsite circuits and two diesel generators 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 offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one diesel generator inoperable in addition to ACTION a or b above, verify that:

1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

2. When in MODE 1, 2, or 3, the steam-driven auxiliary feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within oen hour and at least once per 8 hours thereafter, unless the diesel generators are already operating, restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION (Continued)

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

If tie breakers 2A0417 or 2A0619 are used to provide a source of power, the following buses are required:

for 2A0417	for 2A0619
2A04	2A06
2D1	2D2

b. Demonstrated OPERABLE at least once per 18 months by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE#:

a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day fuel tank,

2. Verifying the fuel level in the fuel storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,

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#Values in parentheses "( )" specify acceptance criteria for unit transfer enable circuit to be demonstrated OPERABLE.

SURVEILLANCE REQUIREMENTS (Continued)

4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using the manual start signal.

5. Verifying the generator is synchronized, loaded to greater than or equal to 4700 (5170) kW in less than or equal to 77 seconds, and operates with a load greater than or equal to 4700 (5170) kW for at least an additional 60 minutes, and

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

c. At least once per 92 days and from new fuel prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.9 but less than or equal to 4.1 when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

d. At least once per 18 months by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

2. Verifying the generator capability to reject a load of greater than or equal to 655.7 (2600) kw while maintaining voltage at 4360 ± 436 volts and frequency at 60 ± 6.0 Hz in the speed control mode.

3. Verifying the generator capability to reject a load of 4700 (5170) kw without tripping. The generator voltage shall not exceed 5450 volts during and following the load rejection.

4. Simulating a loss of offsite power by itself, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

SURVEILLANCE REQUIREMENTS (Continued)

b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the permanently connected loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2 Hz during this test.

5. Verifying that on an ESF test signal without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady state generator voltage and frequency shall be 4360 ± 436 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

6. Verifying the following for the Unit-to-Unit transfer Enable Circuit:

a) On an ESF test signal in Unit 3, without loss of offsite power, the Unit 2 diesel generator starts.

b) With a simulated loss of offsite power in both units in conjunction with an ESF test signal from either unit, and the Unit 3 Transfer Enable Switch in Auto:

1) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

2) Verifying the Unit 2 diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto connected emergency/accident loads from one unit and the safe shutdown loads from one unit through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the combined load. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 ± 436 volts and 60 ± 1.2/-0.3 Hz during this test.

3) Verifying that with the diesel generator operating in the cross-connect mode, with an ESF test signal present from one unit, an ESF test signal from the second unit opens the Unit 3 tie breaker.

4) Verifying that with an ESF test signal present from both units, the Unit 3 tie breaker override will allow reclosure of the tie breaker.

SURVEILLANCE REQUIREMENTS (Continued)

7. Simulating a loss of offsite power in conjunction with an ESF test signal, and

   a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency/accident loads through the load sequence and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After loading, the steady state voltage and frequency of the emergency busses shall be maintained at 4360 $\pm$ 436 volts and 60 +1.2/-0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and low-low lube oil pressure, are automatically bypassed.

8. 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 greater than or equal to 5170 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 Kw. The generator voltage and frequency shall be 4360 $\pm$ 436 volts and 60 $\pm$ 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained at 4360 $\pm$ 436 Volts and 60 + 1.2/-0.3 Hz for the first two hours of this test and 4360 $\pm$ 436 Volts and 60 $\pm$ 1.2 Hz during the remaining 22 hours of this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4b.

9. Verifying that the auto-connected loads to each diesel generator do not exceed 4700 (5170) kw.

10. Verifying the diesel generator's capability to:

    a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

    b) Transfer its loads to the offsite power source, and

    c) Be restored to its standby status.

SURVEILLANCE REQUIREMENTS (Continued)

11. Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated safety injection signal (from either unit, with the Unit 2 Transfer Enable Switch in Auto), overrides the test mode by returning the diesel generator to standby operation and automatically energizes the emergency loads with offsite power.

12. Verifying that each fuel transfer pump transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross connection lines.

13. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.

14. Verifying that lockout relay K23 prevents diesel generator starting when the diesel generator is actuated.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

f. At least once per 10 years by:

1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or the equivalent, and

2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.1. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

BRD:4611F

Table 4.8.1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in Last 20 Valid Tests*	Test Frequency
≤ 1	At least once per 31 days
2	At least once per 14 days**
3	At least once per 7 days
≥ 4	At least once per 3 days

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* Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purpose of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests." Entry into this test schedule shall be made at the 31 day test frequency.

ELECTRICAL POWER SYSTEMS

AC SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minumum, the following AC electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and one Class 1E 4 kV Bus, and

b. One diesel generator with:

1. Day fuel tanks containing a minimum volume of 325 gallons of fuel,

2. A fuel storage system containing a minimum volume of 37,600 (47,000)# gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum AC electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and movement of irradiated fuel, or operation of the fuel handling machine with loads over the fuel storage pool. In addition, when in MODE 5 with the Reactor Coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange, immediately initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2.1 The above required circuit between the offsite transmission network and the Class 1E 4 kV Bus shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

Value in paranthesis specify criteria for unit transfer enable circuit to be operable.

SURVEILLANCE REQUIREMENTS (continued)

If tie breakers 2A0417 or 2A0619 are used to provide a source of power, the following buses are required:

for 2A0417	for 2A0619
2A04	2A06
2D1	2D2

4.8.1.2.2 The above required diesel generator shall be demonstrated OPERABLE by performing the Surveillance Requirements of 4.8.1.1.2 (except 4.8.1.1.2 a.5, d.5, d.6, d.7, d.9, d.10, d.11 and d.13) and 4.8.1.1.3.

BASES

AC SOURCES, DC SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (continued)

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guide 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137, "Fuel Oil Systems for Standby Diesel Generators," Revision 1, October 1979. Reg. Guide 1.137 recommends testing of fuel oil samples in accordance with ASTM-D270-1975. However, ASTM-D270-1965 was reverified in 1975 rather than re-issued. The reverified 1965 standard is therefore the appropriate standard to be used.

The Limiting Conditions for Operation permit continued unit operation if standby AC power is available from the two dedicated emergency diesel generators or from one dedicated diesel generator and from one shared diesel generator in Unit 2. The design of the diesel generator aligned for shared duty conforms with Regulatory Guide 1.81 (revision 1, January 1977) and is capable of automatically supplying power to the designed ESF loads in both units. An evaluation was performed using data from actual surveillance testing which determined that one diesel generator has the capacity to automatically supply AC power to one unit with loss of offsite power and the design basis accident concurrent with loss of offsite power on the other unit. Calculations in accordance with ANSI-N-195, confirm that 47,000 gallons of fuel oil is sufficient to supply a diesel in the shared mode.

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std. 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery thermal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

DESCRIPTION OF PROPOSED CHANGE NPF-10/15-217
AND SAFETY ANALYSIS

This is a request to revised Technical Specification 3/4.3.2, "Engineered Safety Features Actuation System Instrumentation".

Existing Specifications

Unit 2: See Attachment A
Unit 3: See Attachment C

Proposed Technical Specifications

Unit 2: See Attachment B
Unit 3: See Attachment D

Description

The proposed change would modify Technical Specification 3/4.3.2, "Engineered Safety Features Actuation System (ESFAS) Instrumentation"; Table 3.3-4, which provides a listing of trip values for various ESFAS instrumentation. The proposed change would revise the noble gas allowable Technical Specification alarm setpoint for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 Fuel Handling Buildings (FHB).

Air from the FHB is constantly monitored by the Fuel Handling Area Vent (FHAV) Gaseous Airborne Radiation Monitors. Their primary function is to provide alarm to the control room, to initiate isolation of the FHB from normal ventilation, and to actuate the post accident cleanup unit in the event of a fuel handling accident. The current setpoint of 140 cpm above background does not provide adequate margin above background during refueling. SONGS 2 and 3 have experienced several spurious alarms and Fuel Handling Isolation System (FHIS) actuations during their refueling outages. The nuisance alarms and actuations are attributable to movement of irradiated fuel and fuel reconstitution activities. The proposed change will require that the trip setpoint be set sufficiently high to prevent spurious alarm/trips yet sufficiently low to assure an alarm/trip if a fuel handling accident should occur.

Safety Analysis

The proposed change described above shall be deemed to involve a significant hazards consideration if there is a positive finding in any of the following areas:

1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

   Response: No

   The proposed setpoint change would not involve a significant increase in the probability or consequences of the fuel handling accident previously evaluated. This change will impose a new administratively controlled alarm setpoint high enough to prevent any spurious alarms resulting from normal fuel handling activities and yet sufficiently low to assure that the FHIS will properly actuate in the event of a fuel handling accident. There is no reduction in the monitoring and isolation capability of the FHIS. Therefore, this change does not increase the probability or consequences of an accident.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   No change to operating procedures is involved. Operations pertinent to fuel movement and reconstitution activities still fall within the scope of the existing fuel handling accident analysis. Therefore, the proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?

   Response: No

   The proposed setpoint change would not involve a significant margin of safety reduction even though it would increase the allowable Technical Specification alarm setpoint. An independent analysis of the monitor response to a fuel handling accident shows that the noble gas contamination levels under various circumstances far exceed ambient background levels at SONGS 2 and 3. Detection and isolation of a fuel handling accident will be maintained at the same level of confidence when the setpoints are increased in accordance with the highest ambient background level. Because the safety features of the FHIS will remain the same as before, no margin of safety is reduced by the proposed change.

The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870) of amendments that are considered not

likely to involve significant hazardous considerations. Example (i) relates to a purely administrative change to Technical Specifications: for example, a change to achieve consistency throughout the Technical Specifications, correction of an error, or a change in nomenclature.

In this case, the proposed change described above is similar to Example (i) in that the revision of the allowable alarm setpoint in Table 3.3-4 is purely an administrative change to reduce nuisance alarms/actuations during refueling operations. The existing Technical Specification setpoint of 140 cpm was based on an ambient background for an initial core with very little or no loss of fuel integrity. It provides little or no margin above actual background levels during SONGS 2 and 3 refueling outages.

A study has been performed to justify the proposed setpoint change. It can be shown that a monitor response resulting from a design basis fuel handling accident of sixty (60) broken fuel rods is of the order of 497,000,000 cpm. A less severe but "realistic" accident involving only sixteen (16) failed fuel rods will give rise to 126,000,000 cpm. Thus, it is prudent to propose a conservative administrative value for the setpoint which can be set greater than the highest ambient background level but well below the calculated monitor response to a fuel handling accident. This administrative value would ensure early activation of the FHIS in the event of a fuel handling accident and thus eliminate nuisance alarms from either noise spikes or fuel handling operations. This proposed change is consistent with the intent of the existing Technical Specification to isolate the FHB upon the detection of a fuel handling accident and is therefore in compliance with Example (i) of 48 FR 14870.

Safety and Significant Hazards Determination

Based on the above Safety Analysis, it is concluded that: (1) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (2) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

SPW:6787F:8301u

ATTACHMENT A

Existing Technical Specifications, Unit 2

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.*

ACTION:

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.2.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least 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.

*See Special Test Exception 3.10.5

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRI. VALUES

FUNCTIONAL UNIT	TRIP VALUE	ALLOWABLE VALUES
11. FUEL HANDLING ISOLATION (FHIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	$\leq 1.3 \times 10^2$ cpm**	$\leq 1.4 \times 10^2$ cpm**
ii. Particulate/Iodine	$\leq 5.7 \times 10^4$ cpm**	$\leq 6.0 \times 10^4$ cpm**
c. Automatic Actuation Logic	Not Applicable	Not Applicable
12. CONTAINMENT PURGE ISOLATION (CPIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	(6)(7)	(6)(7)
ii. Particulate	(6)(7)	(6)(7)
iii. Iodine	(6)(7)	(6)(7)
c. Containment Area Radiation (Gamma)	$\leq$ 325 mR/hr (MODES 1-4) $\leq$ 2.4 mR/hr (MODE 6)	$\leq$ 340 mR/hr (MODES 1-4) $\leq$ 2.5 mR/hr (MODE 6)
d. Automatic Actuation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

TABLE NOTATION

(1) Value may be decreased manually, to a minimum of greater than or equal to 300 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer and this value is maintained at less than or equal to 400 psia;* the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer is greater than or equal to 400 psia.

(2) Value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi;* the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(3) % of the distance between steam generator upper and lower level instrument nozzles.

(4) Inverse time relay set value 3165V, trip will occur within the tolerances specified in Figure 3.3-1 for the range of bus voltages.

(5) Actuated equipment only; does not result in CIAS.

(6) The trip setpoint shall be set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.

(7) Prior to the completion of DCP 53N, the setpoints for Containment Airborne Radiation Monitor 2RT-7804-1 shall be determined by the ODCM.

*Variable setpoints are for use only during normal, controlled plant heatups and cooldowns.

**Above normal background.

ATTACHMENT B

Proposed Technical Specifications, Unit 2

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.*

ACTION:

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.2.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least 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.

*See Special Test Exception 3.10.5

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRI. VALUES

FUNCTIONAL UNIT	TRIP VALUE	ALLOWABLE VALUES
11. FUEL HANDLING ISOLATION (FHIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	(8)	(8)
ii. Particulate/Iodine	$\leq 5.7 \times 10^4$ cpm**	$\leq 6.0 \times 10^4$ cpm**
c. Automatic Actuation Logic	Not Applicable	Not Applicable
12. CONTAINMENT PURGE ISOLATION (CPIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	(6)(7)	(6)(7)
ii. Particulate	(6)(7)	(6)(7)
iii. Iodine	(6)(7)	(6)(7)
c. Containment Area Radiation (Gamma)	$\leq$ 325 mR/hr (MODES 1-4) $\leq$ 2.4 mR/hr (MODE 6)	$\leq$ 340 mR/hr (MODES 1-4) $\leq$ 2.5 mR/hr (MODE 6)
d. Automatic Actuation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

TABLE NOTATION

(1) Value may be decreased manually, to a minimum of greater than or equal to 300 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer and this value is maintained at less than or equal to 400 psia;* the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer is greater than or equal to 400 psia.

(2) Value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi;* the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(3) % of the distance between steam generator upper and lower level instrument nozzles.

(4) Inverse time relay set value 3165V, trip will occur within the tolerances specified in Figure 3.3-1 for the range of bus voltages.

(5) Actuated equipment only; does not result in CIAS.

(6) The trip setpoint shall be set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.

(7) Prior to the completion of DCP 53N, the setpoints for Containment Airborne Radiation Monitor 2RT-7804-1 shall be determined by the ODCM.

(8) The trip setpoint shall be set sufficiently high to prevent spurious alarm/trips yet sufficiently low to assure an alarm/trip should a fuel handling accident occur.

*Variable setpoints are for use only during normal, controlled plant heatups and cooldowns.

**Above normal background.

ATTACHMENT C

Existing Technical Specifications, Unit 3

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.*

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.2.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least 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.

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*Continuous monitoring and sampling of the containment purge exhaust directly from the purge stack shall be provided for the low and high volume (8-inch and 42-inch) containment purge prior to startup following the first refueling outage. Containment airborne monitor 3RT-7804-1 or 3RT-7807-2 and associated sampling media shall perform these functions prior to initial criticality. From initial criticality to the startup following the first refueling outage containment airborne monitor 3RT-7804-1 and associated sampling media shall perform the above required functions.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

FUNCTIONAL UNIT	TRIP VALUE	ALLOWABLE VALUES
11. FUEL HANDLING ISOLATION (FHIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	$\leq 1.3 \times 10^2$ cpm**	$\leq 1.4 \times 10^2$ cpm**
ii. Particulate/Iodine	$\leq 5.7 \times 10^4$ cpm**	$\leq 6.0 \times 10^4$ cpm**
c. Automatic Actuation Logic	Not Applicable	Not Applicable
12. CONTAINMENT PURGE ISOLATION (CPIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	(6)(7)	(6)(7)
ii. Particulate	(6)(7)	(6)(7)
iii. Iodine	(6)(7)	(6)(7)
c. Containment Area Radiation (Gamma)	$\leq$ 325 mR/hr (MODES 1-4) $\leq$ 2.4 mR/hr (Mode 6)	$\leq$ 340 mR/hr (MODES 1-4) $\leq$ 2.5 mR/hr (MODE 6)
d. Automatic Actuation Logic	Not Applicable	Not Applicable

TABLE NOTATION

(1) Value may be decreased manually, to a minimum of greater than or equal to 300 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer and this value is maintained at less than or equal to 400 psia;* the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer is greater than or equal to 400 psia.

(2) Value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi;* the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(3) % of the distance between steam generator upper and lower level instrument nozzles.

(4) Inverse time relay set value 3165V, trip will occur within the tolerances specified in Figure 3.3-1 for the range of bus voltages.

(5) Actuated equipment only; does not result in CIAS.

(6) The trip setpoint shall be set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.

(7) Prior to the completion of DCP 53N, the setpoints for Containment Airborne Radiation Monitor 3RT-7804-1 shall be determined by the ODCM.

*Variable setpoints are for use only during normal, controlled plant heatups and cooldowns.

**Above normal background.

ATTACHMENT D

Proposed Technical Specifications, Unit 3

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.*

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.2 The logic for the bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The total bypass function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

4.3.2.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least 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.

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*Continuous monitoring and sampling of the containment purge exhaust directly from the purge stack shall be provided for the low and high volume (8-inch and 42-inch) containment purge prior to startup following the first refueling outage. Containment airborne monitor 3RT-7804-1 or 3RT-7807-2 and associated sampling media shall perform these functions prior to initial criticality. From initial criticality to the startup following the first refueling outage containment airborne monitor 3RT-7804-1 and associated sampling media shall perform the above required functions.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

FUNCTIONAL UNIT	TRIP VALUE	ALLOWABLE VALUES
11. FUEL HANDLING ISOLATION (FHIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	(8)	(8)
ii. Particulate/Iodine	$\leq 5.7 \times 10^4$ cpm**	$\leq 6.0 \times 10^4$ cpm**
c. Automatic Actuation Logic	Not Applicable	Not Applicable
12. CONTAINMENT PURGE ISOLATION (CPIS)		
a. Manual (Trip Buttons)	Not Applicable	Not Applicable
b. Airborne Radiation		
i. Gaseous	(6)(7)	(6)(7)
ii. Particulate	(6)(7)	(6)(7)
iii. Iodine	(6)(7)	(6)(7)
c. Containment Area Radiation (Gamma)	$\leq$ 325 mR/hr (MODES 1-4) $\leq$ 2.4 mR/hr (Mode 6)	$\leq$ 340 mR/hr (MODES 1-4) $\leq$ 2.5 mR/hr (MODE 6)
d. Automatic Actuation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

TABLE NOTATION

(1) Value may be decreased manually, to a minimum of greater than or equal to 300 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer and this value is maintained at less than or equal to 400 psia;* the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer is greater than or equal to 400 psia.

(2) Value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi;* the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(3) % of the distance between steam generator upper and lower level instrument nozzles.

(4) Inverse time relay set value 3165V, trip will occur within the tolerances specified in Figure 3.3-1 for the range of bus voltages.

(5) Actuated equipment only; does not result in CIAS.

(6) The trip setpoint shall be set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.

(7) Prior to the completion of DCP 53N, the setpoints for Containment Airborne Radiation Monitor 3RT-7804-1 shall be determined by the ODCM.

(8) The trip setpoint shall be set sufficiently high to prevent spurious alarm/trips yet sufficiently low to assure an alarm/trip should a fuel handling accident occur.

*Variable setpoints are for use only during normal, controlled plant heatups and cooldowns.

**Above normal background.