ATTACHMENT 2

PROPOSED CHANGES

4.6 AUXILIARY ELECTRIC POWER SYSTEM - LIMITING CONDITIONS FOR OPERATIONS

The following Technical Specifications apply to the minimum OPERABLE equipment supplying electric power to the plant auxiliaries.

Objective

To ensure that the capability of supplying electric power to the plant auxiliaries is maintained by defining the minimum OPERABLE equipment.

Specification LCO 4.6.1.1 - Auxiliary Electric Power System - Power Operation

Limiting Conditions for Operation

As a minimum, the following Auxiliary Electrical sources and busses shall be OPERABLE:

a) Two physically independent A.C. circuits between the off site transmission network and the 480V A.C. essential distribution system shall be OPERABLE including,

1) The Reserve Auxiliary Transformer (RAT) and the Unit Auxiliary Transformer (UAT).

NOTE: The UAT shall be considered OPERABLE if the Turbine Generator is on line with both the Generator and the UAT links in place or if the Generator links are or can be removed within 4 hours during periods when the Turbine Generator is off line.

2) 4160V A.C. Bus 1B and either 4160V A.C. Bus 1A or 1C . These busses must also be energized and tie breakers open between those busses connected to independent off site electrical power sources, except during switching operations.

3) The auxiliary power 480V A.C. essential Busses 1A, 1B, and 1C . These busses must also be energized and tie breakers open between those with separate electrical power sources, except during switching and/or diesel generator operation.

b) Both diesel-generator sets shall be OPERABLE with:

1) 325 gallons of fuel contained in the diesel fuel oil day tank,

2) A minimum of 20,000 gallons of fuel in underground storage,

3) One fuel oil transfer pump from the diesel fuel oil storage tank to the diesel fuel oil day tanks,

4) One starting air compressor and receiver per diesel generator set,

5) One auxiliary boiler fuel oil pump OPERABLE between the auxiliary boiler fuel supply and the diesel fuel oil day tank(s),

6. One water-jacket heater OPERABLE for each diesel engine.

NOTE: The water-jacket heaters may be inoperable for up to 72 hours without the associated diesel engine being considered inoperable.

c) The following non-interruptible 120V A.C. busses are OPERABLE:

1) Non-interruptible A.C. Busses 1A and 1A-1, energized from their associated inverter, connected to D.C. Bus 1A, and associated alternate instrument power transformer 1A-1, including the transfer switch and connected cabling,

2) Non-interruptible A.C. Busses 1B and 1B-1, energized from their associated inverter, connected to D.C. Bus 1B, and associated alternate instrument power transformer 1B-1, including the transfer switch and connected cabling,

3) Non-interruptible A.C. Busses 1C and 1C-1, energized from their associated inverter, connected to Battery 1C, and associated alternate instrument power transformer 1C-1, including the transfer switch and connected cabling,

d) The D.C. busses and electrical sources:

1) The following 125V D.C busses:

a) D.C. Bus 1A energized from Battery 1A,

b) D.C. Bus 1B energized from Battery 1B.

There shall be no closed connections between the various D.C. sources.

NOTE: One D.C. bus may be energized from an alternate source and its associated battery and charger aligned to over charge the battery for up to 30 hours without being considered inoperable

2) The following 125V D.C. electrical sources:

a) Battery 1A and Battery Charger 1A, or 1D,

b) Battery 1B and Battery Charger 1B, or 1D,

c) Battery 1C and Battery Charger 1C, or 1D.

NOTE: Battery Charger 1D can only be associated with one battery at any given time.

APPLICABILITY: POWER OPERATION

ACTION:

a) Off Site Sources

1) With either the RAT and 4160V A.C. Bus B or the UAT and 4160V A.C. Busses A and C INOPERABLE,

a) Demonstrate the operability of the remaining A.C. sources by performing the requirements of SR 5.6.1.1.a) within one hour and every 8 hours thereafter, and SR 5.6.1.2.a)5) within one hour unless the OPERABILITY of the diesel generator set(s) has been confirmed as specified within the previous 8 hours.

b) Restore the required 4160V A.C. bus within 12 hours or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

c) Restore the required transformer to an OPERABLE status within 72 hours, or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

b) Diesel Generator and 480V A.C. busses:

1) With either diesel generator set, or a 480V A.C. essential businoperable;

a) Demonstrate the OPERABILITY of the off site A.C. sources by performing the requirements of SR 5.6.1.1.a. within one hour and every 8 hours thereafter, and,

b) If Bus A or C inoperable, demonstrate the OPERABILITY of the remaining diesel generator set and its associated Bus by,

1) Performing the requirements of SR 5.6.1.2.a.5 within one hour unless the OPERABILITY of the diesel generator set has been confirmed as specified within the previous 8 hours.

2) Verifying the Engine Driven Fire Pump is OPERABLE.

3) Verifying the Emergency Condensate header is OPERABLE.

4) Verifying all equipment supplied by the OPERABLE diesel generator set required for SAFE SHUTDOWN COOLING is OPERABLE. (See FSAR TABLES 8.2-4 and 8.2-5)

NOTE: 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 all the surveillance requirements associated with the OPERABILITY of the component.

c) Restore the required 480V A.C. essential bus within 12 hours or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

d) Restore the diesel generator set to an OPERABLE status within 72 hours, or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

2) With one off site circuit and one diesel generator set inoperable,

a) Demonstrate the OPERABILITY of the remaining A.C. sources as in 4.6.1.1.b.1. above.

b) Restore at least one of the inoperable A.C. sources to an OPERABLE status within 12 hours, or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

c) Restore the required A.C. electrical sources within 72 hours from the time of the initial loss or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

3) With both diesel generator sets inoperable,

a) Demonstrate the OPERABILITY of two independent off site A.C. circuits by performing the requirements of SR 5.6.1.1.a. within 1 hour and every 8 hours thereafter.

b) Restore at least one of the inoperable diesel generator sets to an OPERABLE status within 6 hours or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

c) Restore both diesel generator sets to an OPERABLE status within 72 hours from the time of the initial loss or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

4) Upon reaching the minimum underground fuel storage quantity,

a) The auxiliary boiler(s) will be shutdown within the subsequent 6 hours.

5) Both boiler fuel oil pumps may be inoperable for up to 24 hours if at least 5,500 gallons of fuel oil are in the diesel oil storage tank, and both fuel oil transfer pumps between the diesel oil storage tank and the day tanks are OPERABLE.

c) 120V A.C. non-interruptible busses:

1) With one of the non-interruptible 120V A.C. busses not energized,

a) Re-energize the non-interruptible 120V A.C. bus, or be in a LOW POWER within 6 hours.

2) With one of the non-interruptible 120V A.C. busses not energized from its associated inverter,

a) Re-energize the non-interruptible 120V A.C. bus from its associated inverter connected to its associated D.C. bus within 24 hours or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

3) With one of the alternate non-interruptible 120V A.C. bus instrument power transformers inoperable,

a) Restore the inoperable transformer to an OPERABLE status within 72 hours, or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

d) D.C. Power Supplies;

1) With one D.C. bus not energized from its associated battery (except for battery overcharging),

a) Re-energize the D.C. bus from its associated battery within 24 hours, or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

2) With one of the required batteries inoperable,

a) Restore the inoperable battery to an OPERABLE status within 24 hours, or be in a LOW POWER or SHUTDOWN condition within the subsequent 24 hours.

ASSOCIATED SURVEILLANCE REQUIREMENT(s): 5.6.1, 5.6.2

Basis for Specification LCO 4.6.1.1

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during POWER OPERATION ensures that sufficient power will be available, as required to perform the intended safety functions under postulated abnormal and accident conditions. The minimum specified requirements for independent and redundant A.C. and D.C. power sources and distribution systems are adequate to satisfy the basis of General Plant Design Criterion No. 24 as stated in Appendix C of the FSAR.

The normal A.C. power source to plant auxiliaries is the Unit Auxiliary Transformer (UAT) energized by the main turbine-generator. The UAT can also be energized by the off site transmission network after the generator links have been removed to isolate the turbine generator. The UAT is connected to the 4160V A.C. busses 1A and 1C.

The alternate off site A.C. power source is the Reserve Auxiliary Transformer (RAT), normally energized by the off site transmission network. The RAT is connected to the 4160V A.C. Bus 1B. This bus can supply, or be supplied from, the other 4160V A.C. busses through tie breaker connections. Upon loss of power from the UAT, power supply to the plant auxiliaries is transferred to the RAT.

Each 4160V A.C. bus can supply an associated 480V A.C. essential bus through a stepdown transformer. Two alternate diesel generator sets (comprised of two engines and one generator per set) each supply onsite 480V A.C. power to one 480V A.C. essential bus (bus 1 and bus 3, respectively). Either stepdown transformer or diesel generator set is capable of supplying two of the 480V A.C. essential busses through tie breaker connections. First-in-with-lockout features prevent different power sources from being automatically connected to one another. Redundant 2 out of 3 undervoltage relays are provided on each 480V A.C. essential bus. Undervoltage in two of these busses results in load shedding, startup of the diesel generator sets, and loading by the sequencer.

Operation of one diesel generator set provides for SAFE SHUTDOWN COOLING, at the required capacity for one week assuming approximately 16,000 gallons of fuel oil is available. Such a reserve capacity provides ample time for obtaining additional fuel from off site sources for continued operation of the diesel generator set. The available storage is distributed between the diesel generator fuel tank and two auxiliary boiler fuel oil tanks. Fuel oil transfer or auxiliary boiler fuel oil pumps are provided to supply the day tanks from the fuel storage tanks.

There are three separate instruments A.C. and D.C. power sources and distribution systems. Each one includes a battery and battery charger, an inverter, and associated distribution busses. A backup battery charger can be connected to any of the batteries. The normal operating configuration is as specified above in LCO 4.6.1.1.

Section 8 of the FSAR includes a detailed description of the auxiliary electric power system.

The action requirements for various allowable levels of degradation of the power sources provide restrictions upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources is consistent with the initial conditions/assumptions of the FSAR, and are based upon maintaining at least one of the redundant sets of on site A.C. and D.C. power sources and associated distribution systems operable during accident conditions which postulate the loss of all off site power, compounded by a single failure of the other redundant onsite sources.

Specification LCO 4.6.1.2 - Auxiliary Electric Power System - LOW POWER, SHUTDOWN, and REFUELING

Limiting Conditions for Operation

As a minimum, the following Auxiliary Electric Power System sources and busses shall be OPERABLE;

a) One A.C. circuit between the off site transmission network and the 480V A.C. essential distribution system,

b) One 4160V A.C. bus and an associated 480V A.C. essential bus,

c) One diesel generator set with:

1) 325 gallons of fuel contained in the associated diesel fuel oil day tank,

2) A minimum of 10,000 gallons of fuel in underground storage,

3) One fuel oil transfer pump from the diesel fuel oil storage tank to the associated diesel fuel oil day tank,

4) The associated starting air compressor and receiver,

5) One Boiler Fuel Oil pump OPERABLE between the auxiliary boiler fuel supply and the associated diesel fuel oil day tank.

NOTE: Both diesel generator sets may be inoperable for up to 7 days if two independent A.C. circuits between the off site transmission network to the 480V A.C. essential distribution system are OPERABLE.

6) One water-jacket heater OPERABLE for each diesel engine.

NOTE: The water-jacket heaters may be inoperable for up to 72 hours without the associated diesel engine being considered inoperable.

c) Two of the three 120V A.C. non-interruptible busses must be energized.

d) Two of the three batteries, their associated D.C. busses, and a battery charger capable of supplying the batteries must be OPERABLE.

APPLICABILITY: LOW POWER, SHUTDOWN and REFUELING

ACTION:

1) With any of the above minimum required electrical power sources and distribution systems inoperable,

   a) Be in a SHUTDOWN condition within 24 hours, and

   b) Suspend all operations involving core alterations, positive reactivity changes, or movement of irradiated fuel, and

   c) Initiate corrective action to restore the required sources, busses, or distribution systems to an OPERABLE status as soon as possible.

ASSOCIATED SURVEILLANCE REQUIREMENT(S): 5.6.1, 5.6.2

Basis for Specification LCO 4.6.1.2

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems, during SHUTDOWN and REFUELING conditions ensures that: 1) the facility can be maintained in a SHUTDOWN or REFUELING condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining safe operation of the unit.

5.6 EMERGENCY POWER SYSTEMS - SURVEILLANCE REQUIREMENTS

These surveillance requirements apply to the surveillance of the equipment supplying electrical power to the essential plant services.

Objective

To establish the minimum frequency and type of surveillance for equipment supplying electric power to the plant auxiliaries tc ensure that the motive power sources required to safely shut down the plant are available.

Specification SR 5.6.1 - Emergency A.C. Power Sources Surveillance

The surveillance of the emergency A.C. power sources shall be as follows:

1. Each of the required independent A.C. circuits between the offsite transmission network and the onsite 480V A.C. essential distribution system shall be:

   a) Determined OPERABLE at least once per week by verifying correct breaker alignments and indicated power availability,

   b) Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) house power supply from the Unit Auxiliary Transformer circuit to the Reserve Auxiliary Transformer.

2. Each diesel generator set shall be demonstrated OPERABLE:

   a) In accordance with the frequency specified in TABLE 5.6.1-1 on a STAGGERED TEST BASIS by:

      1) Verifying the fuel level in the day tank is at least 325 gallons,

2) Verifying the fuel level in storage is at least the minimum quantity as defined in LCO 4.6.1.1 or LCO 4.6.1.2,

3) Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank.

4) Verifying the OPERABILITY of the auxiliary boiler fuel oil pumps.

5) Verifying the diesel engines start from a normal pre-heated condition and accelerate to normal operating speed. The generator voltage and frequency shall be 480 ± 48 volts and 60 ± 1.2 Hz. within 10 seconds after the start signal.

6) Verifying the OPERABILITY of the diesel engine "shutdown" and "declutch' protective function.

7) Verifying that after the generator is synchronized to the associated 480V A.C. Bus, it can be loaded to greater than or equal to 1200 kw with two diesels per generator in less than or equal to 90 seconds, and operates with a load greater than or equal to 1200 kw for at least 2 hours.

8) Verifying the water-jacket heaters are OPERABLE, and the water temperature is at least 120°F.

b) At least once per quarter by verifying that a sample of fuel oil 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-D975-1977, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM-D2274-1970.

c) At least once per 18 months, during REACTOR SHUTDOWN, by:

1) Subjecting the diesel engines to an inspection in accordance with the procedures prepared in conjunction with the manufacturer's recommendations,

2) Calibrating the diesel engine water-jacket heater temperature control functions; and the low exhaust temperature, overspeed, high water temperature, low oil pressure, and high oil temperature, "shutdown" and "declutch" protective functions; and the inlet manifold Δ P selective function,

3) Verifying the generator capability to reject a load of greater than, or equal to, 175 kw while maintaining voltage at 480 ± 48 volts and frequency at 60 ± 1.2 Hz,

4) Verifying, from the parallel condition, the generator capability to reject a load of 1200 kw without tripping. The generator voltage shall not exceed 552 volts during and following the load rejection,

5) Verifying that with an undervoltage relay actuation signal,

   a. De-energization of the 480V A.C. essential busses and load shedding from the 480V A.C. essential busses occurs.

b. The diesel engines start on the auto-start signal, energize the 480V A.C. essential busses, energize the auto-sequenced loads, and OPERATE for greater than or equal to 5 minutes while their generator is loaded with the programed loads. After energization, the steady state voltage and frequency of the 480V A.C. essential busses shall be maintained at 480 ± 48 volts and 60 ± 1.2 Hz during this test.

6) Verifying that the auto-sequenced loads to each diesel generator set do not exceed 1200 kw with two diesel engines operating per generator.

7) Verifying the diesel generator's capability to be synchronized with the offsite power source upon a simulated restoration of offsite power while the generator is loaded with its emergency loads.

8) Verifying the diesel generator sets OPERATE for at least 24 hours. During this test, the diesel generator shall be loaded to greater than or equal to 1200 kw.

9) Within 5 minutes after completing the 24 hour test specified in SR 5.6.1.2.d)8), verify the diesel engines start and accelerate to normal operating speed. The generator voltage and frequency shall be 480 ± 48 volts and 60 ± 1.2Hz. within 10 seconds after the start signal.

d) At least once per 10 years, or after any modifications which are determined to affect diesel generator interdependence, by starting both diesel generators simultaneously, during REACTOR SHUTDOWN, and verifying that both diesel generator sets accelerate to normal operating speed.

e) At least once per 10 years by draining the fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or equivalent.

3. The 120V A.C. Instrument busses shall be determined energized in the required manner as stated in LCO 4.6.1 at least once per week by verifying correct breaker alignment and indicated voltage on the busses.

4. The 125V D.C. busses shall be determined energized in the required manner as stated in LCO 4.6.1 at least once per week by verifying correct breaker alignment and indicated voltage on the busses.

TABLE 5.6.1-1

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 7 days **
≥ 3	See TABLE 5.6.1-2

---

* 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 20 tests are determined on a per diesel generator basis. Entry into this schedule shall be made at the monthly test frequency.

** This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 demands has been reduced to one or less. When the test is done on a once per 7 days interval, it will not be done on a STAGGERED TEST BASIS.

A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains, or other designated components obtained by dividing the specified test interval into n equal subintervals.

b. The testing of one system, subsystem, train, or other designated component should occur at the beginning of each subinterval.

TABLE 5.6.1-2

ADDITIONAL RELIABILITY ACTIONS

No. of Failures in Last 20 Valid Tests	No. of Failures in Last 100 Valid Tests	Action
3	6	Within 30 days, prepare and maintain a report for NRC audit describing the diesel engine reliability improvement program implemented at the site. Minimum requirements for the report are indicated in Attachment 1 to this table.
5	11	If the cause of the failure cannot be found and remedied, declare the diesel generator inoperable and perform a requalification test program for the affected diesel engine. Requalification test program requirements are indicated in Attachment 2 to this table.
N/A	N/A	Submit a yearly data report on the diesel generator reliability.

ATTACHMENT 1 TO TABLE 5.6.1-2

REPORTING REQUIREMENT

As a minimum, the reliability improvement program report for NRC audit shall include:

a) a summary of all tests (valid and invalid) that occurred within the time period over which the last 20/100 valid tests were performed

b) analysis of failures and determination of root causes of failures

c) evaluation of each of the recommendations of NUREG/CR-0660, "Enhancement of Onsite Emergency Diesel Generator Reliability in Operating Reactors," with respect to their application to the Plant

d) identification of all actions taken, or to be taken, to 1) correct the root causes of failures defined in b) above and 2) achieve a general improvement of diesel generator reliability

e) the schedule for implementation of each action from d) above

f) an assessment of the existing reliability of electric power to engineered-safety-feature equipment

Once a licensee has prepared and maintained an initial report detailing the diesel generator reliability improvement program at the site, as defined above, the licensee need prepare only a supplemental report within 30 days after each failure during a valid demand for so long as the affected diesel generator unit continues to violate the criteria (3/20 or 6/100) for the reliability improvement program remedial action. The supplemental report need only update the failure/demand history for the affected diesel generator unit since the last report for that diesel generator. The supplemental report shall also present an analysis of the failure(s) with a root cause determination, if possible, and shall delineate any further procedural, hardware or operational changes to be incorporated into the site diesel generator improvement program and the schedule for implementation of those changes.

ATTACHMENT 2 TO TABLE 5.6.1-2

DIESEL GENERATOR REQUALIFICATION PROGRAM

(1) Perform seven consecutive successful demands, as specified in SR 5.6.1.2.a, without a failure within 30 days of diesel generator being restored to OPERABLE status, and fourteen consecutive successful demands without a failure within 75 days of the diesel generator being restored to OPERABLE status.

(2) If a failure occurs during the first seven tests in the requalification test program, perform seven successful demands without an additional failure within 30 days of diesel generator being restored to operable status and fourteen consecutive successful demands without a failure within 75 days of the diesel generator being restored to OPERABLE status.

(3) If a failure occurs during the second seven tests (tests 8 through 14) of (1) above, perform fourteen consecutive demands without an additional failure within 75 days of the failure which occurred during the requalification testing.

(4) Following the second failure during the requalification test program, be in REACTOR SHUTDOWN within 36 hours.

(5) During requalification testing the diesel generator should not be tested more frequently than at 24-hour intervals.

After a diesel generator has been successfully requalified, subsequent repeated requalification tests will not be required for that diesel generator under the following conditions:

(a) The number of failures in the last 20 valid demands is less than 5.

(b) The number of failures in the last 100 valid demands is less than 11.

(c) In the event that following successful requalification of a diesel generator, the number of failures is still in excess of the remedial action criteria (a and/or b above) the following exception will be allowed until the diesel generator is no longer in violation of the remedial action criteria (a and/or b above).

Requalification testing will not be required provided that after each valid demand the number of failures in the last 20 and/or 100 valid demands has not increased. Once the diesel generator is no longer in violation of the remedial action criteria above, the provisions of those criteria alone will prevail.

Basis for Specification SR 5.6.1

The above surveillance requirements are adequate to demonstrate the OPERABILITY of the offsite and onsite A.C. power sources, and of the A.C. power distribution system to perform their intended safety functions under postulated abnormal and accident conditions.

In particular, the surveillance requirements for the standby diesel generator sets are consistent with the intent of Regulatory Guide 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Revision 1, August 1977.

Specification SR 5.6.2 - D.C. Power Sources Surveillance

Each 125-volt battery and charger shall be demonstrated OPERABLE:

a) At least once per week by verifying that:

1) The parameters in Table 5.6.2-1 meet the Category A limits, and

2) The total battery terminal voltage is greater than or equal to 129 volts on float charge.

b) At least once per quarter, and within one week after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1) The parameters in Table 5.6.2-1 meet the Category B limits,

2) There is no visible corrosion at either terminals or connectors, and

3) The average electrolyte temperature of a representative sample of at least 20% of the cells are above 60°F.

c) At least once per 18 months by verifying that:

1) The cells, cell plates, battery racks, and cell-to-cell and terminal connections show no visual indication of physical damage or abnormal deterioration, and

2) The cell-to-cell and terminal connections are adequately tight, and sufficiently coated with anti-corrosion material, and

3) The temperature difference of each cell-to-cell and terminal connection is less than 10°F.

d) At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in an OPERABLE status all of the emergency loads for the design duty cycle when the battery is load-tested to service discharge.

e) At least once per 60 months, during kEACTOR SHUTDOWN,

1) A performance discharge test shall be done on batteries 1A and 1B (at an average discharge rate of 85 amps) over a period of 24 hours, or until the battery terminal voltage reaches 101.5 volts. The test shall be acceptable if, after 19.2 hours the battery is capable of producing at least 85 amps, and the battery terminal voltage is greater than 101.5 volts.

2) A performance discharge test shall be done on battery 1C (at an average discharge rate of 79 amps) over a period of 12 hours, or until the battery terminal voltage reaches 101.5 volts. The test shall be acceptable if, after 9.6 hours the battery is capable of producing at least 79 amps and the battery terminal voltage is greater than 101.5 volts.

NOTE: Once per 60 month interval, the performance discharge test may be done in lieu of the battery service test in SR 5.6.2.d).

f) Annual performance discharge tests of battery capacity shall be performed on any battery that shows signs of abnormal degradation or has reached 85% of the service life expected for the application. Abnormal degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TABLE 5.6.2-1

BATTERY SURVEILLANCE REQUIREMENTS

	CATEGORY A (1)	CATEGORY B (2)	
Parameter	Limits for each designated pilot cell.	Limits for each connected cell.	Allowable value for each connected cell. (3)
Electrolyte Level	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark.	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark.	Above top of plates, and not overflowing.
Float Voltage	≥ 2.13 volts. (b)	≥ 2.13 volts (c)	> 2.07 volts
Specific Gravity(a)(4)	≥ 1.200	≥ 1.195	Not more than .020 below the average of all connected cells.
		Average of all connected cells > 1.200	Average of all connected cells ≥ 1.195 (b)

(a) Corrected for electrolyte temperature and level.
(b) Or battery charging current is less than (2) amps when on charge.
(c) Corrected for average electrolyte temperature.

(1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.
(2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within the next 7 days.
(3) Any Category B parameter not within its allowable value indicates an INOPERABLE battery.
(4) Numbers assume a manufacturer's recommended full charge specific gravity of 1.205 to 1.220.

Basis for Specification SR 5.6.2

The type of battery surveillance called for in this specification has been demonstrated through experience to provide a reliable indication of a battery cell initial breakdown well before it becomes unserviceable. Since batteries will deteriorate with time, these periodic tests will avoid precipitous failure.

The manufacturer's recommendation to equalize charge is vital to maintenance of the ampere-hour capacity of the battery. As a check upon the effectiveness of this charge, each battery is tested to verify that it meets its service ampere-hour capacity. In addition, its voltage is monitored as a function of time. If a cell has deteriorated, or if a connection is loose, the voltage under load will drop excessively, indicating need for replacement or maintenance.

ATTACHMENT 3

SIGNIFICANT HAZARDS ANALYSIS

SIGNIFICANT HAZARDS ANALYSIS

INTRODUCTION

A safety analysis was included as Attachment 2 to the submittal of these Specifications on December 30, 1983 (P-83415). This safety analysis will cover those changes made since the above submittal.

All these proposed changes to LCO's have the new format incorporated, and changes of this type have no impact on safety.

LCO 4.6.1

This Specification has been divided into two new Specifications, LCO 4.6.1.1 and LCO 4.6.1.2. LCO 4.6.1.1 describes auxiliary electrical equipment required for operation above 2% power. Requirement for operation below 2% power is described in LCO 4.6.1.2.

In addition to the changes required by the format changes, LCO 4.6.1.1 has had existing sections reorganized into a more logical sequence. Specific changes include: the expansion of the 120V A.C. bus requirements to describe bus pairs , and the battery requirements have been altered to more accurately reflect the existing system. None of these changes alter the safety functions of this system.

SR 5.6.1

This surveillance was altered to be compatible with LCO 4.6.1.1 and LCO 4.6.1.2. The generic letter 84-15 requirements on Diesel Generator Reliability have also been incorporated. The reference to "partial discharge" has been changed to "service discharge". This service discharge is the full capacity of the batteries required by the FSAR, not the full capacity of the batteries. The performance discharge TESTS have also been added, and TABLE 5.6.2-1 was altered to be more easily read. These are not safety significant changes.

CONCLUSION

These changes have been made to accurately and concisely indicate the manner in which the plant may be safely operated. These changes, for the most part, have been made to correct errors and make the Specifications more clear.

Based on the above evaluation, it is concluded that operation of Fort St. Vrain in accordance with the proposed changes will not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in any margin of safety.

Therefore, these changes will not increase the risk to the health and safety of the public nor do they involve any significant hazards considerations.