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P.O. Box 14000, Juno Beach, FL 33408-0420

JANUARY 2 4 1989

L-89-31

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Revised Technical Specifications
Proof and Review Comments

By letter L-88-478, dated November 2, 1988, Florida Power & Light Company (FPL) submitted comments on the Proof and Review version of the revised Technical Specifications for Turkey Point Units 3 and 4. In that letter FPL agreed to forward under a separate submittal, a proposed license amendment for the electrical system. This proposed license amendment was submitted to the NRC on December 20, 1988 (letter L-88-511).

The attached electrical system technical specifications (based on our December 20, 1988 submittal) reflect the standard technical specification format and constitute FPL's proof and review comments on Section 3/4.8 Electrical Power Systems.

If there are any questions, please contact us.

Very truly yours,

W. F. Conway
Senior Vice President - Nuclear

WFC/TCG/gp

Attachment

No Checks Rec'd

cc: Malcolm L. Ernst, Acting Regional Administrator,
Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

A001
1/1

3/4.8 ELECTRICAL POWER SYSTEMS

3/4 8.1 AC SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

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

a. TWO 239 KV-4160 volt start-up transformers with associated circuits, and

b. TWO diesel generators with on site supply of 40,000 gallons of fuel available.

APPLICABILITY: MODES 1, 2, 3, 4

ACTION:

a. With either start-up transformer inoperable,

1) Demonstrate the OPERABILITY of both diesel generators by performing surveillance requirement 4.8.1.1.1.a.3 separately, for each diesel generator within 24 hours, if the diesel generator has not been successfully tested within the past 24 hours, and at least once per 24 hours while the startup transformer is inoperable,

2) Notify the NRC within 4 hours of declaring a startup transformer inoperable.

3) a) For the unit with its startup transformer inoperable in MODE 1, restore the inoperable start-up transformer to OPERABLE status within 24 hours or reduce THERMAL POWER to ≤ 30% RATED POWER within the next 6 hours. Restore the inoperable startup transformer to OPERABLE status prior to increasing THERMAL POWER TO > 30% RATED POWER.

b) With the unit in MODES 2, 3 or 4, restore the inoperable startup transformer to OPERABLE status within 24 hours or place the unit in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

4) Restore the inoperable startup transformer to OPERABLE status within 30 days or place the remaining unit in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With either diesel generator inoperable, for reasons other than the performance of surveillance requirements 4.8.1.1.1.c and 4.8.1.1.1.d,

1) Demonstrate the OPERABILITY of the remaining diesel generator by performance of surveillance requirement 4.8.1.1.1.a.3 within 24 hours and once per 24 hours thereafter while the diesel generator is inoperable,

2) Verify that the engineered safety features of the remaining diesel generator are OPERABLE within 2 hours,

3) Verify the OPERABILITY of the required startup transformers and their associated circuits within 1 hour, and

4) Restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 12 hours and in COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

c. With either diesel generator inoperable, for the performance of surveillance requirements 4.8.1.1.1.c and 4.8.1.1.1.d,

1) Demonstrate the OPERABILITY of the remaining diesel generator by performance of surveillance requirement 4.8.1.1.1.a.3 within 24 hours and once per 24 hours thereafter while the diesel generator is inoperable,

2) Verify that the engineered safety features of the remaining diesel generator are OPERABLE, within 2 hours

3) Verify the OPERABILITY of the required startup transformers and their associated circuits within 1 hour, and

4) Restore the inoperable diesel generator 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.

d. With one start-up transformer and one diesel generator inoperable,

1) Demonstrate the OPERABILITY of the remaining diesel generator by performance of surveillance requirement 4.8.1.1.1.a.3 within 8 hours and once per 24 hours thereafter while the diesel generator is inoperable,

2) Verify that the engineered safety features of the remaining diesel generator are OPERABLE, within 2 hours

3) Verify the OPERABILITY of the remaining startup transformer and its associated circuits within 1 hours, and

4) For the unit with the inoperable startup transformer:

a) Restore the inoperable startup transformer to OPERABLE status within 12 hours or reduce THERMAL POWER to ≤ 30% RATED POWER within the next 6 hours. Restore the inoperable startup transformer to OPERABLE status prior to increasing THERMAL POWER TO > 30% RATED POWER.

b) With the unit with the inoperable startup transformer in MODES 2, 3 or 4, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

5) Notify the NRC within 4 hours of declaring both a startup transformer and a diesel generator inoperable.

6) For the unit with an OPERABLE startup transformer:

a) Restore the inoperable diesel generator to OPERABLE status within 72 hours of declaring the diesel generator inoperable or place the remaining unit in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two diesel generators inoperable, verify the OPERABILITY of at least one startup transformer and be in at least HOT STANDBY within the next 12 hours and in COLD SHUTDOWN within the following 30 hours. Otherwise initiate corrective action to restore at least one startup transformer to OPERABLE status as soon as possible and then be in at least HOT STANDBY in the next 12 hours and in COLD SHUTDOWN in the following 30 hours. This ACTION applies to both units simultaneously.

f. With two startup transformers inoperable,

1) Demonstrate the OPERABILITY of both diesel generators by performance of surveillance requirement 4.8.1.1.1.a.4 within 8 hours and once per 24 hours thereafter while the startup transformer(s) are inoperable,

2) Verify that the engineered safety features of both diesel generators are OPERABLE within 2 hours,

3) a) With the affected unit(s) in MODE 1, reduce THERMAL POWER to ≤ 30% RATED POWER within the next 12 hours. Restore the inoperable startup transformer to OPERABLE status prior to increasing THERMAL POWER to > 30% RATED POWER. This ACTION applies to both units simultaneously.

b) With the affected unit(s) in MODES 2, 3, or 4 be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

4) Notify the NRC within 4 hours of declaring both startup transformers inoperable.

4.8.1.1.1 Each diesel generator shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8-1 with diesel generator surveillances performed nonconcurrently by:

1. Verifying fuel in the day tank, the engine-mounted fuel tank, and the fuel storage tank contains a total greater than 40,000 gallons.

2. Verifying that a fuel transfer pump can be started and transfers fuel from the Diesel Oil Storage Tank to the Day Tank.

3. Verifying that the diesel generator starts from normal conditions and accelerated to provide 60 ± 1.2 Hz frequency and 4160 ± 624 volts in ≤ 15 seconds*.

4. Verifying that the generator is synchronized, loaded to ≥ 2500 kw within 10 minutes* and operates for ≥ 60 minutes.

5. Verifying that the diesel generator cooling system functions within design limits during the 1-hour full load test required by Specification 4.8.1.a.4.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within acceptable limits when checked for viscosity, water, and sediment.

c. During each Unit 4 refueling outage by:

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

d. At least once per refueling, not to exceed 24 months by:

1. Verifying the diesel generator's capability to:

(a) Reject a load of greater than or equal to 380 kw without exceeding 4160± 624 volts and 60± 1.2 Hz.

(b) Reject a load of greater than or equal to 2500 kw without tripping. The generator voltage shall return to less than or equal to 4784 volts within 2 seconds following the load rejection.

* The diesel generator start (15 sec) from normal conditions shall be performed at least once per 184 days in these surveillance tests. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube priod and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

2. Verifying that diesel generator trips that are made operable during the test mode of diesel operation are inoperable when the diesel is not in the test mode of operation.

3. Alternately initiating one of the following two diesel startup tests.

   (a) Simulate a safety injection signal, and allow the diesel generator to achieve nominal rates voltage and speed. Then simulate a loss of offsite power, and allow the diesel generator to load and stabilize.

   (b) Simulate a loss of offsite power, and allow the diesel generator to load and stabilize. Then simulate a safety injection signal, and allow the diesel generator to sequence safety loads and stabilize.

4. Monitoring the tests specified in 4.8.1.1.1.d.3 to:

   (a) Verify proper deenergization and load shedding from the 4160 volt busses.

   (b) Verify that the diesel generator starts from ambient conditions and accelerates to provide 60± 1.2 hz frequency and 4160± 624 volts in ≤ 15 seconds.

5. Verifying that the diesel generator operates for at least 8 hours by performing the following tests:

   (a) Load the diesel generator to ≥ 2750 kw during the first 2 hours of the 8 hour test. During this 2 hour period, increase the load to ≥ 2850 kw until the generator electrical load is stabilized and then decrease back to ≥ 2750 kw.

   (b) Load the diesel generator to ≥ 2500 kw during the last 6 hours of the 8 hour test.

   (c) Verify that voltage, frequency, and cooling system functions are within design limits during the 8 hour full-load test.

6. Demonstrating the ability to sequentially:

   (a) Synchronize the diesel generator with offsite power while the generator is supplying emergency loads:

(b) Transfer the emergency load to offsite power;

(c) Isolate the diesel generator; and

(d) Return the diesel generator to standby status.

7. Verifying the auto-connected loads to each diesel generator do not exceed 2750 kw.

e. At least once per 10 years or after any modification that could affect diesel generator independence, start both diesel generators simultaneously at a time when both reactors are shutdown and verify that both diesel generators provide 60± 1.2 Hz frequency and 4160 ± 624 volts in less than 15 seconds.

4.8.1.1.2 Reports - All valid diesel generator failures shall be reported to the Commission in a Special Report pursuant to Specification 6.9.3.p. within 30 days. 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 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 20 VALID TESTS*	NUMBER OF FAILURES IN LAST 100 VALID TESTS*	TEST FREQUENCY
≤ 1	≤5	Once per 31 days
	≥ 6	Once per 14 days
≥ 2 **	≥ 9	Once per 7 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, but determined on a per diesel generator basis.

For the purpose of determining the required valid test frequency, the previous valid test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul, including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive valid tests in a single series. Ten of these valid tests shall be in accordance with the routine Surveillance Requirements 4.8.1.1.1.a.4 and 4.8.1.1.1.a.5; and four valid tests in accordance with the 184 day testing requirement of Surveillance Requirements 4.8.1.1.1.a.4 and 4.8.1.1.1.a.5. If this criterion is not satisfied during the first series of valid tests, any alternate criterion to be used to transvalue the failure count to zero requires prior NRC approval.

** The associated valid 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.

ELECTRICAL POWER SYSTEMS

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 start-up transformer and associated circuits or one offsite circuit supplying at least one 4160 volt bus, A or B, and

b. One diesel generator capable of supplying power to its associated OPERABLE 4160 volt bus, with an onsite supply of 40,000 gallons of fuel available.

APPLICABILITY*: MODES 5 and 6

ACTION:

With less than the above minimum required AC electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, or crane operation with loads over the fuel storage pool, and within 8 hours, depressurize and vent the Reactor Coolant System through a vent greater than or equal to 2.2 square inches. 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 and initiate corrective action to increase RCS inventory as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required AC electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1 (except for Specification 4.8.1.1.1.a.4), and 4.8.1.1.2.

* (Caution - If the opposite unit is in MODES 1, 2, 3 or 4, see Specification 3.8.1.1)

3/4 8.2 DC SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum, the following DC electrical sources shall be OPERABLE:

a. 125 volt DC batteries no. 3A, 3B, 4A and 4B, and

b. Battery chargers 3B, 4A and 4S and any two of battery chargers 3A, 4B or 3S.

APPLICABILITY: MODES 1, 2, 3, 4

ACTION:

a. With one of the required batteries inoperable, restore the inoperable battery to OPERABLE status within 24 hours or be in at least HOT STANDBY within 12 hours and COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

b. With one or more of the required battery chargers inoperable, restore one or more of the inoperable battery chargers to OPERABLE status within the time limits specified in Table 3.8-1; otherwise be in at least HOT STANDBY within the next 12 hours and COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

SURVEILLANCE REQUIREMENTS

4.8.2.1 Each 125 volt battery bank and charger shall be demonstrated OPERABLE:

a. At least once per 24 hours read and record the pilot cell specific gravity. The specific gravity shall be within limits of Table.4.8-2 Category A.

b. At least once per 7 days by verifying that:

1) The pilot cell parameters (except specific gravity) in Table 4.8-2 meet the Category A limits, and

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

c. At least once per 31 days by performing the following:

1) Rotate the pilot cell, and

2) Check water level and restore as necessary recording amount of water added.

Table 3.8-1

BATTERY CHARGER ALLOWABLE OUT-OF-SERVICE TIMES

		BATTERY CHARGERS (BC) 3B, 4A, AND 4S			
		No-BC's Inoperable	One-BC Inoperable	Two-BC's Inoperable	Three BC's Inoperable
Battery Chargers (BC) 3A, 4B, and 3S	No-BC's Inoperable	N/A	72 hours	24 hours	1 hour
	One-BC Inoperable	N/A	72 hours	1 hour	1 hour
	Two-BC's Inoperable	24 hours	1 hour	1 hour	1 hour
	Three-BC's Inoperable	1 hour	1 hour	1 hour	1 hour

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts, or battery overcharge with battery terminal voltage above 143 volts, verify that:

1) The parameters in Table 4.8-2 meet the Category B limits.

2) There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10-6 ohm, and

3) The average electrolyte temperature of every sixth cell is above 60 F.

e. At least once per 92 days perform a detailed visual inspection of the battery chargers.

f. At least once per 12 months by verifying that:

1) The cells, and attery racks show no visual indication of physical damage or abnormal deterioration,

2) The cell-to-cell and terminal connections are clean, tight, and coated with anticorrosion material.

3) The resistance of each cell-to-cell and terminal connection is less than or equal to 150 x 10-6 ohm, and

4) Each 50 kw battery charger will supply at least 390 ± 10 amperes at 125 volts for at least 8 hours and each 37.5 kw battery charger will supply at least 290 ± 10 amperes at 125 volts for at least 8 hours.

g. At least once per 12 months by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.

TABLE 4.8-2

BATTERY SURVEILLANCE REQUIREMENTS

	CATEGORY A (1)	CATEGORY B (2)	
PARAMETER	LIMITS FOR EACH designated pilot cell	LIMITS FOR EACH connected cell	ALLOWABLE (3) value for connected cell
Electrolyte Level	Greater than minimum level indication mark, and less than ¼ inch above maximum level indication mark	Greater than minimum level indication mark, and less than ¼ inch above maximum level indication mark	Above top of plates and not overflowing
Float Voltage	Greater than or equal to 2.13 volts	Greater than or equal to 2.13 volts (6)	Greater than or equal to 2.07 volts
Specific Gravity (4)	Greater than or equal to 1.200 (5)	Greater than or equal to 1.195	Not more than 0.020 below the average of all connected cells
		Average of all connected cells greater than 1.205	Average of all connected cells greater than or equal to 1.195 (5)

TABLE NOTATIONS

(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 equalizing charge is started. All Category A and B parameter(s) must be 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 equalizing charge is started. All Category B parameter(s) must be restored to within limits within 7 days.

(3) Any Category B parameter not within its allowable value indicates an inoperable battery.

(4) Corrected for electrolyte temperature and level.

(5) Or battery charging current is less than 2 amps when on charge.

(6) Corrected for average electrolyte temperature.

DC SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, three batteries and associated full-capacity chargers* shall be OPERABLE.

APPLICABILITY**: MODES 5 and 6

ACTION:

With one or more of the required 125 volt batteries inoperable and/or associated chargers inoperable, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, or movement of irradiated fuel; initiate corrective action to restore the required batteries and associated chargers to OPERABLE status as soon as possible, and within 8 hours, depressurize and vent the Reactor Coolant System through a vent greater than or equal to 2.2 square inches.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The above required 125 volt battery banks and associated full capacity chargers shall be demonstrated OPERABLE in accordance with Specification 4.8.2.1.

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* (defined as a designated charger or a spare charger)

** (Caution - If the opposite unit is in MODES 1, 2, 3 or 4, see Specification 3.8.2.1)

3/4 8.3 ONSITE POWER DISTRIBUTION

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.3.1 The following electrical busses shall be energized in the specified manner with the 4160 volt and 480 volt Load Center tie breakers open between redundant busses within the unit and between the busses of Units 3 and 4:

a. One train of AC Busses consisting of:
   1) 4160 Volt Bus A,
   2) 480 Volt Load Center Busses A and C, and
   3) 480 Volt Motor Control Center Busses A*** and C vital sections.

b. One train of AC Busses consisting of:
   1) 4160 Volt Bus B
   2) 480 Volt Load Center Busses B and D, and
   3) 480 Volt Motor Control Center Bus B, vital section.

c. 480 volt Motor Control Center Bus D*, ***vital section.

d. Opposite unit trains of AC Busses consisting of:
   1) 4160 Volt Busses, A and B,** and
   2) Motor Control Centers A, B, and C vital sections

APPLICABILITY: MODES 1, 2, 3, 4

ACTION:

a. With one of the required trains of AC busses not energized, re-energize the train within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. This ACTION does not apply to the Limiting Condition for Operations sections 3.8.3.1.c or 3.8.3.1.d.

b. With one of the required trains of AC busses of the opposite unit inoperable, for periodic refueling outage maintenance, re-energize the train within 7 days or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

c. With one of the required trains of AC busses of the opposite unit inoperable, for reasons other than ACTION b above, re-energize the train within 72 hours or be in at least HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours.

d. With 480 volt Motor Control Center D vital section not energized, for periodic refueling outage maintenance, verify the OPERABILITY of both diesel generators within 1 hour and re-energize it within 24 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

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* 480 Volt Motor Control Center D is common to Unit 3 and 4.

** One 4160 Volt Bus may be de-energized while the 480 Volt Load Centers are cross-tied with the associated unit in shutdown modes 5 or 6 and the opposite unit at power upon issuance of an engineering evaluation.

*** Loss of the normal or backup sources of power to Motor Control Centers (MCC) 3A, or D necessitates the application of ACTION f, g, or h and does not imply the inoperability of any single MCC unless both sources of power are lost concurrently.

LIMITING CONDITION FOR OPERATION (Continued)

e. With 480 volt Motor Control Center D vital section not energized, for reasons other than ACTION d above, verify the OPERABILITY of both diesel generators within 1 hour and re-energize it within 8 hours or be in at least HOT STANDBY within the next 12 hours and COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

f. With the 480 volt Motor Control Center D vital section normal source of power or backup source of power inoperable, for periodic refueling outage maintenance, verify the OPERABILITY of both diesel generators within 1 hour and restore the inoperable power supply to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

g. With the 480 volt Motor Control Center D vital section normal source of power or backup source of power inoperable, for reasons other than ACTION f above, verify the OPERABILITY of both diesel generators within 1 hour and restore the inoperable power supply to OPERABLE status witin 72 hours or be in at least HOT STANDBY within the next 12 hours and COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

h. With the 480 volt Motor Control Center 3A vital section normal source of power inoperable, for periodic refueling outage maintenance, verify the OPERABILITY of both diesel generators within 1 hour and restore the inoperable power supply to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

i. With the 480 volt Motor Control Center 3A vital section normal source of power inoperable, for reasons other than ACTION h, above, verify the OPERABILITY of both diesel generators within 1 hour and restore the inoperable power supply to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 12 hours and in COLD SHUTDOWN within the following 30 hours. This ACTION applies to both units simultaneously.

SURVEILLANCE REQUIREMENTS

4.8.3.1 The specified busses shall be determined energized and aligned in the required manner at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses.

ONSITE POWER DISTRIBUTION

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.3.2 As a minimum, the following electrical busses shall be energized:

a. One train of AC emergency busses consisting of one 4160 volt and two associated 480 volt AC busses.

APPLICABILITY*: MODES 5 and 6

ACTION:

With any of the above required electrical busses not energized, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, or movement of irradiated fuel, initiate corrective action to energize the required electrical busses as soon as possible, and within 8 hours, depressurize and vent the RCS through a vent greater than or equal to 2.2 square inches.

SURVEILLANCE REQUIREMENTS

4.8.3.2 The specified busses shall be determined energized in the required manner at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses.

* (Caution - If the opposite unit is in MODES 1, 2, 3, or 4, see Specification 3.8.3.1)

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

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 ACTION requirements specified for the 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 condition assumptions of the safety analyses and is based upon maintaining adequate 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 one onsite A.C. source. Two physically independent A.C. circuits exist between the offsite transmission network and the onsite Class 1E Distribution System of each unit by utilizing the following: (1) a total of eight transmission lines which lead to five separate transmission substations tie the Turkey Point Switchyard to the offsite power grid. (2) Two dual-winding startup transformers each provide 100% of the A and B train 4160 volt power from the switchyard to its associated unit. In addition, each startup transformer has the capability to supply backup power of the equivalent of one emergency diesel generator (approximately 2500 kW) to the opposite unit's A-train 4160 volt bus. Two emergency diesel generators (EDG) provide onsite emergency A.C. power for both units. EDG A provides A-train power for both Units 3 & 4 and EDG B in turn provides B-train power for both units.

Due to the shared nature of numerous electrical components between Turkey Point Units 3 and 4, the inoperability of a component on an associated unit will often affect the operation of the opposite unit. These electrical components consist primarily of both emergency diesel generators (EDG's), both startup transformers, four 4160 volt busses, most 480 volt motor control centers, four 125 volt D.C. busses, a particular five out of six battery chargers, and four battery banks. Depending on the component(s) which is (are) determined inoperable, the resulting ACTION can range from the eventual shutdown of the opposite unit long after the associated unit has been shutdown (30 days) to an immediate shutdown of both units. Therefore, ACTION times allow for an orderly sequential shutdown of both units when the inoperability of a component(s) affects both units with equal severity. When an ACTION statement requires a dual unit shutdown, the time to be in HOT STANDBY has been revised from 6 to 12 hours. This is to allow the orderly shutdown of one unit at a time and not jeopardize the reliability of the electrical grid by imposing a dual unit shutdown.

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

As each startup transformer only provides the limited equivalent power of one EDG to the opposite Units A-train 4160 volt bus, the allowable out-of-service time of 30 days has been applied before the opposite unit is required to be shutdown. With both one startup transformer and one EDG inoperable, the unit with the inoperable transformer can continue to operate at full power for only 12 hours based on the loss of its associated startup transformer and one of the EDG's. After 12 hours, if the unit with the inoperable start-up transformer is in MODE 1 it must reduce THERMAL POWER to 30% RATED POWER within the next 6 hours. The 30% RATED POWER limit was chosen because at this power level the decay heat and fission product production has been reduced and the operators are still able to maintain automatic control of the feedwater trains and other unit equipment. At lower power levels the operators loose automatic control of the feedwater system and must use manual control with the feedwater bypass lines. By not requiring a complete unit shutdown, the plant avoids a condition requiring natural circulation and avoids intentionally relying on engineered safety features for non-accident conditions. If the unit with the inoperable start-up transformer is in MODES 2,3, or 4, then the unit will be required to be cooled down in accordance with the time frames of specification 3.0.3. The unit with the OPERABLE startup transformer is controlled by the limits for inoperability of the shared EDG. With both start-up transformers inoperable, the unit(s) in MODE 1 are required to reduce THERMAL POWER to 30% RATED POWER within 12 hours. By not requiring a complete unit shutdown, the plant avoids a condition requiring natural circulation cooldown and avoids intentionally relying on engineered safety features for non-accident conditions. If the unit(s) with the inoperable start-up transformer is in MODES 2,3, or 4, then the unit will be required to be cooled down in accordance with the time frames of specification 3.0.3. If a unit returns its associated start-up transformer to OPERABLE status, then that unit may increase THERMAL POWER to 30% RATED POWER and both units enter ACTION a based on the time that the remaining inoperable start-up transformer was taken out of service.

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. 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.

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

The term verify 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 notification of a loss of start-up transformer(s) to the NRC is to be performed through the resident NRC inspector.

The term verify 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 notification of a loss of start-up transformer(s) to the NRC is to be performed through the resident NRC inspector.

The requirement for both units to reach HOT STANDBY within 12 hours upon loss of both diesel generators minimizes the possibility of transients while allowing the orderly shutdown of both units.

The surveillance tests specified are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of normal power.

The EDG Surveillance testing requires that each EDG be started from normal conditions only once per 184 days with no additional warmup procedures. Normal conditions in this instance are defined as the pre-start temperature and lube oil conditions each EDG normally experiences with the continuous use of prelube systems and immersion heaters.

Each unit, as a backup to the normal standby AC power supply, is capable of sequentially starting and supplying the power requirement of the required safety feature equipment. Each will assume full load within 60 seconds after the initial starting signal. .

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

The SURVEILLANCE REQUIREMENTS to demonstrate each Emergency Diesel Generator (EDG) OPERABLE requires that the auto-connected loads to each EDG do not exceed 2750 kW. This requirement can be demonstrated by following the ESF testing method where each unit is individually tested for two loading conditions (i.e., loads due to loss of offsite power (LOOP) and loads due to LOOP coincident with a Safety Injection (SI)). The results of the test on one unit are then added arithmetically to the test on the other unit with a LOOP coincident with a Safety Injection (SI) for each EDG respectively. The sum of the difference between these loads operated in the test mode and the actual expected loads (i.e., load differences due to pumps run in recirculation mode) are added to the test values for each EDG. The sum of the two test condition loads on opposite units will be representative of the actual design basis auto-connect loads on each EDG. The EDG 8-hour Surveillance test demonstrates each EDG's capability to power the maximum of all auto-connected and required manually loaded emergency shutdown load (2850 kW) following a design basis accident, loss of offsite power (LOOP) and a single failure of one EDG.

The surveillance requirement for the full load rejection test requires the steady state voltage reading to be less than or equal to 4784 volts within 2 seconds following the load rejection. The purpose of the subject surveillance is to verify the proper operation of the voltage regulator and overspeed circuits during a full load rejection. Since the ability to measure instantaneous maximum transient voltage is dependent on the mechanical response of the measurement devices and not necessary reflective of actual regulator performance, the ability of the diesel generator to return to a steady state condition in a defined time period is a more accurate and useful measurement of the diesel generator's ability to properly regulate voltage during the performance of a full load rejection test.

The specified fuel supply will ensure power requirements for at least a week.

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

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. In MODES 5 and 6, the specification for coolant loops requires at least 2 coolant loops to be OPERABLE. To ensure that at least one coolant loop has a source of onsite AC power available, the shutdown specification for AC sources requires that the OPERABLE diesel generator be capable of supplying power to its associated OPERABLE 4160 volt bus. This is so that during a loss of offsite power event at least one train of shutdown cooling will have a source of onsite AC power. In addition to the above actions, the Reactor Coolant System (RCS) must be depressurized and vented. This is required because the pressurizer Power Operated Relief Valves (PORVs) may no longer be OPERABLE to prevent overpressure in these MODES. The minimum size of the vent ensures that overpressure can be adequately relieved without exceeding the RCS pressure/temperature limits.

During a unit shutdown the one required circuit between the offsite transmission network and the onsite Class IE Distribution System can consist of at least the associated unit startup transformer feeding one 4160 volt Bus A or B, the opposite unit's startup transformer feeding the associated unit's 4160 volt Bus A, or the associated unit's 4160 volt Bus A or B backfed through its main and auxiliary transformers with the main generator isolated. As inoperability of numerous electrical components often affect the operation of the opposite unit, the applicability for the shutdown LIMITING CONDITION FOR OPERATION (LCO) for A.C. Sources, D.C. Sources and Onsite Power Distribution all contain statements to ensure the LCO's of the opposite unit are considered.

The allowable out-of-service time for each of the four batteries D.C. busses is 24 hours in order to allow for required battery maintenance without requiring both units to be shutdown.

The allowable out-of-service times for the battery chargers depicted in Table 3.7-1 are based on the following criteria:

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

1. Battery chargers 3B, 4A and 4S are all required for the operation of both units. EDG's A and B field flashing are powered by batteries 3A and 4B respectively. With one of battery chargers 3B, 4A or 4S inoperable, a single failure of Battery 3A or 4B could result in less than the minimum required number of battery chargers being OPERABLE. Therefore, an allowable out-of-service time of 72 hours is applied due to the reliance on a particular EDG.

2. With any two of battery chargers 3B, 4A and 4S, or with any two of battery chargers 3A, 4B and 3S, one D.C. bus is inoperable and the corresponding allowable out-of-service time of 24 hours is applied.

3. With a total of three or more battery chargers inoperable, shutdown of both units is required after 1 hour based on the loss of greater than or equal to one-half of the available battery chargers and one D.C. bus.

Verifying average elelctrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values, and the performance of battery service discharge test ensures the effectiveness of the charging system, the ability to handle high discharge rates, and verfifies the battery capability to supply its required load.

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 not more than 0.015 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 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

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

Operation with a battery cells parameter outside the normal limit but within the allowable value specified in Table 4.8-2 is permitted for a period. During this period: (1) the allowable values for electrolyte level ensures 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 0.010 below the maufacturer's recommended full charge specific gravity, ensure that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cells specific gravity, ensures that an individual cell's specific gravity will not be more than 0.030 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 cells float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

The ACTION requirements which concern the inoperability of certain Motor Control Centers (MCC's) and 4160 volt Busses are limited by the action requirements of certain equipment which receive power from them. As MCC D is common between both Units 3 and 4, it has been given an allowable out of service time of 24 hours to allow the performance of preplanned maintenance. For all reasons other than the performance of preplanned preventative maintenance, the allowable out of service time for MCC D is 8 hours. As MCC D automatically transfers from a normal power supply to a back-up power supply fed from the opposite train, allowable out-of-service times have been applied to the power supplies themselves based on their reliance on a specific EDG to provide the "only" power source for the MCC. Therefore, the normal and back-up power supplies for MCC D both have allowable out-of-service times of 72 hours (7 days for preplanned preventative maintenance) based on the reliance on the remaining power source (EDG A or B) to power the required two Emergency Containment Coolers (ECC's), two Emergency Containment Filters (ECF's) of each unit and one of the required battery chargers 4S. As MCC 3A also automatically transfers from a normal power supply to a back up power supply fed from the opposite train, an allowable out-of-service time has been applied to the normal power supply itself based on the fact that the 3A MCC powers certain auxiliary equipment necessary for OPERABILITY of the A diesel generator. Therefore, upon the loss of the normal power supply to the 3A MCC, the A EDG is not OPERABLE. The ACTION statements for the 3A MCC are similar to those applied to an inoperable diesel generator.

With one unit shutdown the 4160 volt Busses on the associated unit are only permitted to be inoperable for up to 7 days, for periodic refueling outage maintenance, upon issuance of an engineering evaluation based on the single failure vulnerability of equipment powered by sources on the shutdown unit which is required for the opposite unit at power.