

TRANSMISSION CONTROL AGREEMENT

APPENDIX E

Nuclear Protocols

**DIABLO CANYON NUCLEAR POWER PLANT
UNITS 1 & 2**

**REQUIREMENTS FOR OFFSITE
POWER SUPPLY OPERABILITY
REVISION 1**

DCPP 1&2 REQUIREMENTS FOR OFFSITE POWER SUPPLY OPERABILITY**OVERVIEW**

During normal operation, each DCPP unit's electrical loads are supplied from the unit's main onsite electrical generator. If the generator is not available, either due to unit shutdown or other reason, the loads are transferred to an alternative source. The preferred immediate alternate source of electrical power for DCPP electric loads (safety-related and nonsafety-related) is the offsite power supply or 230kV grid. In addition DCPP has a delayed 500 kV source. The offsite power source is sometimes referred to as the preferred power supply in the regulatory documents.

The basic requirement for the offsite power supply is that it provides sufficient capacity and capability for safe shutdown and design basis accident mitigation. When this condition is met, the offsite power supply is considered Operable with respect to the DCPP Operating License and Technical Specifications. It is a necessary condition of the Operating License that the offsite power supply be Operable at all times. If the offsite power system is declared Inoperable, action must be taken to shut down an on-line DCPP unit(s) and, for an off-line unit, to suspend activities as required by the DCPP Operating License and Technical Specifications. DCPP must also perform additional diesel testing. The offsite power system is considered Inoperable if it is degraded to the point that it does not have the capability to effect safe shutdown and to mitigate the effects of an accident at DCPP. This level of degradation can be caused by an unstable offsite power system, or any condition which renders the offsite power unavailable for safe shutdown and emergency purposes.

In specific terms, the offsite power supply voltage (at the DCPP switchyard) must stay within the range of 207 kV to 240kV under post accident operating conditions. During normal operation the voltage must be held enough above 207kV so that when DCPP transfers its load from the onsite source to the offsite source the voltage does not decrease below 207kV. For normal operation with all lines in service the voltage must be above 211kV. During normal operation, the voltage should be above 218kV. Otherwise the offsite power supply is considered Inoperable. Since a design basis accident can result in a unit trip, it is imperative that the trip not impair the operability of the offsite power system. Therefore, following a trip of a DCPP unit (i.e., the unit breakers open), the DCPP switchyard voltage must recover to and be maintained at or above 207 kV within 16 seconds following the trip. If this condition cannot be met, then the offsite power supply in the pre trip condition is considered Inoperable, and action must be taken to shut down the operating DCPP unit(s). In addition, the 500 and 230 kV grid must remain stable if both DCPP units trip.

System Operating procedures and programs shall be in place to ensure that various system operating conditions (generating unit outages, line outages, system loads, spinning reserve, etc.), including multiple contingency events, are evaluated and understood, such that impaired or potentially degraded grid conditions are recognized, assessed and immediately communicated to the DCPP operating staff for Operability determination.

SPECIFIC REQUIREMENTS

Note: This section identifies the operational requirements for the DCPD offsite power supply. These requirements are part of the DCPD design basis and licensing basis and include PG&E System Operating Instruction 0-23 as revised from time to time. Failure to meet these requirements may render the offsite power supply Inoperable, thus requiring the operating DCPD unit(s) to shutdown. Failure to meet these requirements must be immediately communicated to PG&E and the DCPD operating staff for operability determination. Changes in the operation of the transmission network that conflict with these requirements require prior approval by PG&E.

1. Three transmission lines into the 500 kV switchyard and two lines into the 230 kV DCPD switchyard are normally in service. Any increase or decrease in the number of lines into the DCPD switchyard requires prior approval by PG&E.

No line may be removed from service at anytime without prior notification to the DCPD Operations Department. At least two independent sources of power, the 500 kV and the 230kV system between the transmission network (grid) and DCPD switchyards shall be available at all times. PG&E System Operating Procedure, 0-23, Operating Instructions for Reliable Transmission Service for Diablo Canyon, provides specific requirements to determine operability of these sources.

2. With both Diablo Canyon units off-line, the DCPD 500 and 230kV offsite power source should be capable of providing 105MW and 78 MVAR to Diablo Canyon for normal operation, safe shutdown, and design basis accident mitigation.
3. The minimum grid voltage at DCPD switchyard shall be maintained at or above 218kV for normal operation with all lines in service. In the event of a system disturbance or line outage that can cause the voltage to dip below 218kV, including the trip of a DCPD unit, the grid voltage shall recover to 207kV or above within 16 seconds.
4. Planning and operating reliability criteria shall result in plans for the following events without loss of grid stability or availability:
 - a) The loss of two DCPD units.
 - b) The loss of any generating unit on the PG&E grid.
 - c) The loss of any major transmission circuit or intertie on the PG&E grid.
 - d) The loss of any large load or block of load on the PG&E grid.
5. The maximum grid voltage at the DCPD switchyard shall be maintained at or below 240kV. (References 10, 11)
6. The normal operating voltage of the DCPD switchyard shall be maintained at 230 kV. The DCPD switchyard voltage shall not exceed 240kV unless required to preserve transmission network integrity.

7. The 500 kV system shall be maintained between 510kV and 550kV. Operation of DCPD is limited between .97 p.u. and 1.05 p.u. Requests to operate above 1.01 p.u. shall be analyzed prior to implementation to assure viability of the 500kV and 230kV after a DCPD unit trip. If two of three 500 kV lines are out of service, spinning reserve must be available that is equal to the total of DCPD generation.

System studies shall be performed and updated based on changing grid conditions (load growth, etc.) to identify critical conditions that could render offsite power supply Inoperable. The offsite power system is considered Inoperable if it is degraded to the point that it does not have the capability to effect safe shutdown and to mitigate the effects of an accident at DCPD. This level of degradation can be caused by an unstable offsite power system, or any condition which renders the offsite power supply unavailable for safe shutdown and emergency purposes. Procedures and programs shall be in effect to ensure that the DCPD operating staff is immediately notified of such conditions. Grid conditions that are more severe with respect to DCPD switchyard voltages or otherwise unanalyzed, render the offsite power supply Inoperable. DCPD operating staff shall be immediately notified of such conditions. Auditable records of system study results shall be maintained. Study results, including revisions and updates, shall be transmitted via letter to PG&E. Study results and conclusions shall be assessed at least annually and updated, if needed, based on changing grid conditions. Results of the annual assessments shall be transmitted via letter to PG&E.

System studies shall consider the interconnections between PG&E, and other utilities in the Western States Coordinating Council (WSCC) region.

8. In the event of loss of the DCPD offsite power supply:

Note: With regard to Station Blackout(SB 0) DCPD 1 &2 are 4 hour coping plants. The regulatory requirement is that DCPD be able to withstand a loss of all AC power (loss of offsite power plus loss of both Emergency Diesel Generators) for 4 hours. Therefore, at least one transmission line into the DCPD switchyard should be restored within 4 hours to prevent possible core damage.

- a) Highest possible priority shall be given to restoring power to the DCPD switchyards.
- b) Should incoming lines to the DCPD switchyards be damaged, highest priority shall be assigned to repair and restoration of at least one line into the DCPD switchyards.
- c) Repair crews engaging in power restoration activities for DCPD shall be given the highest priority for manpower, equipment, and materials.
- d) Formal programs and procedures shall be in place to effect items a), b), and c) above.

9. Grid frequency shall be maintained at 60 Hertz (nominal). The following operations are initiated for low system frequency conditions:
- a) At 59.75 Hz, A- 18 interruptible customers are tripped.
 - b) At 59.1 Hz, PG&E system load shedding is initiated. Two 5% blocks (10%) of load is tripped at this frequency and at 0.2 Hz decrements until 50% of load has been tripped (10 5% blocks).
 - c) At 58.2 Hz the north and south 500 kV intertie lines are tripped to separate the PG&E system from SCE and the Northwest systems.
 - d) Thermal plants are equipped with 3 setpoint underfrequency relays that would cause underfrequency tripping to protect the turbines and generators from being damaged. The set points are:
 - 58 Hz with 3-minute time delay
 - 57 Hz with 1-minute time delay
 - 55 Hz with 0.5 seconds time delay
 - e) Hydro generators are tripped last at 54.0 Hz with 1-minute time delay.
10. PG&E Bulk Power Transmission System Reliability Criteria as described in the DCPD Updated Final Safety Analysis Report shall be maintained. Changes to the reliability criteria that could adversely impact grid reliability and availability as defined in this specification require prior approval of PG&E.
11. PG&E transmission lines shall be patrolled annually to ensure that the physical and electrical integrity of transmission system components is maintained.
12. Line insulators, pole hardware terminals, and tower hardware terminal within the first three miles from the Diablo switchyard shall be washed and inspected at least three times a year to reduce line outages that may result from flashovers due to possible accumulated contamination.
13. Preventive maintenance, testing and calibration of DCPD switchyard circuit breakers and protective relays shall be performed as follows:
- PG&E: 230kV & 500kV circuit breakers are inspected every 2 years and overhauled every 8 years. Transmission line relays are tested every 36 months.
- Preventive maintenance and testing of DCPD switchyard batteries shall be performed per IEEE 450-1972. Preventive maintenance and testing of DCPD switchyard battery chargers and DC system components shall be performed every 3 months.
14. Updates to applicable portions of Section 8.0, Electric Power of DCPD 1&2 Updated Final Analysis Report (UFSAR) shall be provided annually. These updates will be used by PG&E to prepare a UFSAR change submittal to the NRC. DCPD is required

by 10CFR50.71(e) to submit to the NRC periodic updates to the UFSAR.

These Specific Requirements mirror existing operating protocols, equipment, regional and national reliability organization standards and are subject to modification as necessary when new standards, equipment or protocols are adopted or updated.

SONGS 2&3 REQUIREMENTS FOR OFFSITE POWER SUPPLY OPERABILITY

Revised January 5, 1998

OVERVIEW

The preferred source of electrical power for SONGS electrical loads (safety-related and nonsafety-related) is the *offsite power supply* or 230 kV grid. The offsite power supply is sometimes referred to as the *preferred power supply* in the regulatory documents.

The basic requirement for the offsite power supply is that it provides *sufficient capacity and capability* to safely shut down the reactor and to mitigate certain specified accident scenarios. When this condition is met, the offsite power supply is considered Operable with respect to the SONGS Operating License and Technical Specifications. It is a necessary condition of the Operating License that the offsite power supply be Operable at all times. If the offsite power system is declared Inoperable, action must be taken to shut down an online SONGS unit(s) and, for an offline unit, to suspend activities as required by the SONGS Operating License and Technical Specifications. The offsite power system is considered Inoperable if it is degraded to the point that it does not have the capability to supply electrical loads needed to safely shut down the reactor and to mitigate the effects of an accident at SONGS. This level of degradation can be caused by an unstable offsite power system, or any condition which renders the offsite power unavailable to safely shutdown the units or to supply emergency electrical loads.

In specific terms, the offsite power supply voltage (at the SONGS switchyard) must stay within the range of 218 kV to 238 kV under all normal and plant accident (i.e. emergency shutdown or trip) conditions. Otherwise the offsite power supply is considered Inoperable. Since accident scenarios for which the plant is designed can result in a unit trip, it is imperative that the trip not impair the operability of the offsite power system. Therefore, following a trip of a SONGS unit (i.e., the unit breakers open), the SONGS switchyard voltage must recover to and be maintained at or above 218 kV within 2.5 seconds following the trip. If this condition cannot be met, then the offsite power supply is considered Inoperable, and action must be taken to shut down the operating SONGS unit(s). Even though these requirements apply at all times, this condition is primarily of concern when one SONGS unit is online and the other unit offline. If both SONGS units are online and one unit trips (due to an accident or otherwise), the non-tripped unit will provide local voltage support to the SONGS switchyard, and 230 kV system voltage will remain within the required range. In cases where one SONGS unit is online and one unit offline, the offsite power supply must be sufficiently robust to survive a trip of the online unit and meet the SONGS voltage requirements in the post-trip condition. A dual unit trip is not the limiting condition since a plant accident is not postulated simultaneous with a dual unit trip.

System Operating procedures and programs shall be in place to ensure that various system operating conditions (generating unit outages, line outages, system loads, spinning reserve, etc.), including multiple contingency events, are evaluated and understood, such that impaired or potentially degraded grid conditions are recognized, assessed and communicated to the SONGS

Control Room for Operability determination.

The SONGS switchyard is made up of the SCE switchyard and the SDG&E switchyard. Unless specifically stated otherwise, SONGS switchyard requirements contained in this document apply to both the SCE switchyard and the SDG&E switchyard.

SPECIFIC REQUIREMENTS

Note 1: This section identifies the operational requirements for the SONGS offsite power supply. These requirements are part of the SONGS design basis and licensing basis. Failure to meet these requirements may render the offsite power supply Inoperable, thus requiring the operating SONGS unit(s) to shutdown. Failure to meet these requirements must be immediately communicated to SCE and the SONGS Control Room for operability determination. Changes in the operation of the transmission network that conflict with these requirements require prior approval by SCE.

Note 2: Specific requirements, procedures, operating bulletins, division orders, and analysis that support or provide the basis for the specific operational requirements may be revised periodically subject to prior approval of the affected parties.

1. Nine transmission lines into the SONGS switchyard are normally in service. Any increase or decrease in the number of lines into the SONGS switchyard requires prior approval of SCE. (Reference 7)

No line may be removed from service for greater than 30 days without prior notification to SCE. At least two independent transmission lines (one from SCE and one from SDG&E) between the transmission network (grid) and SONGS switchyard shall be in service at all times. (References 1, 2, 3, 4, 7, 8)

2. With both San Onofre units off-line, the SONGS offsite power source shall be capable of providing 152 MW and 96 MVAR to San Onofre for normal operation and for shutting down the units during plant Design Basis Accident (DBA) conditions. (References 9, 10)
3. The minimum grid voltage at the SONGS switchyard shall be maintained at or above 218 kV. In the event of a system disturbance that can cause the voltage to dip below 218 kV, including the trip of a SONGS unit, the grid voltage shall recover to 218 kV or above within 2.5 seconds. (References 9, 10, 12, 13, 18)
4. The following initiating events shall not result in the loss of grid stability or availability:
 - a. The loss of a San Onofre Unit (with the other unit already offline), or
 - b. The loss of any generating unit on the SCE and SDG&E grids, or
 - c. The loss of any major transmission circuit or intertie on the SCE and SDG&E grids, or

- d. The loss of any large load or block of load (e.g., due to a bus section outage) on the SCE and SDG&E grids.

(References 2, 3, 4, 8)

- 5. The maximum grid voltage at the SONGS switchyard shall be maintained at or below 238 kV. (References 10, 11, 18)
- 6. The normal operating voltage of the SONGS switchyard shall be maintained at 230 kV. The SONGS switchyard voltage shall not exceed 232 kV unless required to preserve transmission network integrity. (References 10, 11, 18)
- 7. The limiting conditions for SONGS offsite power source operability are defined as follows:
 - 1. One SONGS unit is off- line, and
 - 2. One of the critical line (s) outages occurs (see list of the lines below), and
 - 3. VAR flows north and south of SONGS are above the threshold levels for the existing combined SCE and SDG&E import level as defined by the referenced nomograms in the ECC Operating Procedure : SONGS Voltage, dated December 9, 1997.

Based on these nomograms and SONGS offline unit's mode status if the ECC, Grid Control Center (GCC), or ISO determines that the operating point is outside the applicable derated import nomogram line, they shall notify SONGS immediately that a particular transmission line is out of service, and the critical system conditions are sufficient to cause SONGS off site power source to be considered INOPERABLE; i.e., unable to support SONGS voltage at 218 kV if the remaining unit trips. SONGS Control Room will declare the offsite source inoperable (in anticipation of losing the second SONGS unit) and will declare the time period within which the on-line unit will have to initiate shutdown if conditions are not corrected. The time period will be within 1 to 24 hours, based on the SONGS plant and equipment conditions.

List of the critical transmission lines:

Critical Line(s) Out In SCE Territory

Palo Verde -Devers 500 kV Line
Ellis- Johanna & Ellis-Santiago 230 kV Lines
Lugo-Serrano & Mira Loma-Serrano 500 kV Lines
Lugo- Mira Loma 2&3 500 kV Lines
Two Midway - Vincent 500 kV Lines
SONGS- Serrano & SONGS - Chino 230 kV Lines

Critical Line(s) Out in SDG&E Territory

Palo Verde- N. Gila 500 kV Line
 N. Gila- Imperial Valley 500 kV Line
 Imperial Valley- Miguel 500 kV Line
 Imperial Valley- Miguel 500 kV Line & Imperial Valley- LaRosita 230 kV Line
 SONGS-San Luis Rey 230 kV Tap & SONGS - Mission 230 kV Line

Systems studies shall be performed and updated based on changing grid conditions (load growth, etc.) to identify critical conditions, such as the above cases, that could render the offsite power supply Inoperable. The offsite power system is considered Inoperable if it is degraded to the point that it does not have the capability to provide electrical support to safe shutdown loads and to mitigate the effects of an accident at SONGS. This level of degradation can be caused by an unstable offsite power system, or any condition which renders the offsite power supply unavailable for safe shutdown and emergency purposes. The following actions are required:

- a. Procedures and programs shall be in effect to ensure that the SONGS Control Room is immediately notified of such conditions.
- b. Grid conditions that are more severe with respect to SONGS switchyard voltage, or are otherwise unanalyzed, render the offsite power supply Inoperable. The SONGS Control Room shall be immediately notified of such conditions.
- c. Auditable records of current system studies shall be made available to SCE as needed to demonstrate compliance with regulatory requirements. Study results, including revisions and updates, shall be formally transmitted to SCE.
- d. Study results and conclusions shall be assessed at least annually and updated, if needed, based on changing grid conditions. Results of the annual assessments shall be formally transmitted to SCE.

(References 1, 2, 19, 21)

System studies shall consider the interconnections between SCE, SDG&E, and other utilities in the Western Systems Coordinating Council (WSCC) region. (Reference 7)

8. In the event of loss of the SONGS offsite power supply:

Note: SONGS 2 and 3 are required by NRC regulations to be able to safely cope with a loss of all AC power (Station Blackout) for a maximum of four hours. The four hour coping duration is based on the expectation that at least one source of AC power (offsite transmission line or onsite diesel generator) will be restored to the blacked-out unit within the four hours to ensure the proper functioning of systems required for plant safety.

- a. Highest possible priority shall be given to restoring power to the SONGS switchyard. Procedures and training should consider several potential methods of transmitting power from black-start capable units to the SONGS switchyard. This includes such items as nearby gas turbine generators, portable generators, hydro generators, and black-start fossil power plants. (References 15, 26, 28)
- b. Should incoming lines to the SONGS switchyard be damaged, highest priority shall be assigned to repair and restoration of at least one line into the SONGS switchyard.
- c. Repair crews engaging in power restoration activities for SONGS shall be given the highest priority for manpower, equipment, and materials.
- d. Formal programs and procedures shall be in place to effect items a, b, and c above.

(References 14, 15, 16, 17, 26, 27)

9. Grid frequency shall be maintained at 60 Hertz (nominal). A trip of one SONGS unit shall not cause the grid frequency to dip below 59.7 Hertz. The following operations are initiated for low system frequency conditions:
 - a. At 59.3 Hertz, SCE system load shedding program is initiated.
 - b. At 58.2 Hertz, automatic separation of the SCE system from the SDG&E system is initiated at the SONGS switchyard when either San Onofre unit is pre-selected to separate with the SDG&E system.
 - c. At 58.0 Hertz, manual separation of the SCE system from the SDG&E system is initiated at the SONGS switchyard when either San Onofre unit is pre-selected to separate with the SDG&E system.
 - d. At 57.0 Hertz, automatic separation of the SCE system from the SDG&E system is initiated at the SONGS switchyard when no San Onofre unit is selected to separate with the SDG&E system.
 - e. At 56.8 Hertz, manual separation of the SCE system from the SDG&E system is initiated at the SONGS switchyard when no San Onofre unit is selected to separate with the SDG&E system.

Note: The above separation setpoints are provided for information only. SCE and SDG&E are currently reviewing the 57 Hz separation setpoint. This setpoint may be changed to ensure that system separation occurs prior to a trip of the nuclear unit(s), which also occurs at approximately 57 Hz. SCE will inform the ISO of any changes to the system separation setpoint.

(References 7, 20)

10. SCE and SDG&E Bulk Power Transmission System Reliability Criteria as described in the SONGS 2&3 Updated Final Safety Analysis Report shall be maintained. It is recognized that the SCE and SDG&E Bulk Power Transmission System Reliability Criteria as described in the SONGS 2&3 Updated Final Safety Analysis Report may be revised from time to time. In the event the reliability criteria are revised, a system assessment and/or study (as described under specification 7) shall be performed to determine if the revised reliability criteria adversely impact grid reliability and availability as defined in this specification. Results of the assessment and/or study together with a copy of the revised reliability criteria shall be provided to SCE. Changes in grid operation based on the revised criteria and associated studies shall not be implemented without prior approval of SCE. (Reference 7)
11. SCE and SDG&E transmission lines shall be patrolled annually to ensure that the physical and electrical integrity of transmission system components is maintained. (References 7, 22)
12. Line insulators, pole hardware terminals, and tower hardware terminals within the first three miles from the San Onofre switchyard shall be inspected annually and washed at least two times a year to reduce line outages that may result from flashovers due to possible accumulated contamination. (References 7, 22)
13. Preventive maintenance, testing and calibration of SONGS switchyard circuit breakers and protective relays shall be performed as follows:

SCE: 230 kV circuit breakers are overhauled every 300 normal operations or 25 kickouts. Response time/trip testing is performed annually. Transmission line relays are tested biannually. (References 7, 24, 25)

SDG&E: 230 kV circuit breakers are overhauled every five years. Trip testing is performed annually. Transmission line relays are tested biannually. (Reference 7)
14. Preventive maintenance and testing of SONGS switchyard batteries shall be performed per IEEE 450-1972. Preventive maintenance and testing of SONGS switchyard battery chargers and DC system components shall be performed routinely. (Reference 7, 23)
15. Updates to applicable portions of Section 8.0, Electric Power of the SONGS 2 & 3 Updated Final Safety Analysis Report (UFSAR) shall be provided annually. These updates will be used by SCE to prepare a UFSAR change submittal to the NRC. SONGS is required by 10CFR50.71(e) to submit to the NRC periodic updates to the UFSAR.

REFERENCES

- 1) SONGS 2&3 Operating License and Technical Specifications, Section 3.8, Electrical Power Systems

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- 2) 10CFR50 Appendix A, General Design Criterion 17 (GDC-17), Electrical Power Systems
- 3) NUREG 75/087, Standard Review Plan Revision 1, Section 8.2, Offsite Power System
- 4) NUREG 0800, Standard Review Plan Revision 2, Section 8.2, Offsite Power System
- 5) NUREG 0800, Standard Review Plan Revision 2, Branch Technical Position ICSB-11 (PSB), Stability of Offsite Power Systems
- 6) NUREG 0712, SONGS 2&3 Safety Evaluation Report, Section 8.0, Electric Power Systems
- 7) SONGS 2 & 3 Updated Final Safety Analysis Report, Section 8.0, Electric Power
- 8) ANSI/IEEE Std. 765-1983 Preferred Power Supply for Nuclear Power Generating Stations
- 9) SONGS Design Calculation E4C-082, System Dynamic Voltages During Design Basis Accident
- 10) SONGS Design Calculation E4C-090, Auxiliary System Voltage Regulation
- 11) SONGS Design Calculation E4C-092, Short Circuit Studies
- 12) SONGS Design Calculation E4C-098, 4 kV Swgr Protective Relay Setting
- 13) DBD-SO23-120, SONGS Design Basis Document, 6.9KV, 4.16KV and 480V Electrical Systems
- 14) 90051, SONGS Station Blackout Analyses
- 15) NUMARC 87-00 Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors
- 16) Letter from M. O. Medford (SCE) to the Document Control Desk (NRC), dated April 17, 1989, Subject: "Response to 10 CFR 50.63, 'Loss of all Alternating Current Power,' San Onofre Nuclear Generating Station Units 1, 2 and 3"
- 17) Letter from F. R. Nandy (SCE) to the Document Control Desk (NRC), dated May 1, 1990, Subject: "Supplemental Response to 10 CFR 50.63, 'Loss of All Alternating Current Power,' Station Blackout (TAC No. 68599/600), San Onofre Nuclear Generating Station Units 1, 2, and 3"
- 18) System Operating Bulletin 17 Appendix, System Voltage Control for San Onofre Nuclear Generating Station (Rev. January, 1998)
- 19) ECC Operating Procedure: Songs Voltage (Rev. 12/09/1997)
- 20) System Operating Bulletin 113, San Onofre 220 kV System Separation (Rev. April 15, 1995)
- 21) Regulatory Guide 1.93, Availability of Electric Power Sources

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- 22) SCE Division Order 40.35, Transmission Line Routine Patrol, Inspection, Scheduling, and Record Keeping (Rev. 10/87)
- 23) SCE Division Order 60.20, Storage Batteries (Rev. 3/82)
- 24) SCE Division Order 50.10, Predictive Maintenance Circuit Breakers and Switches (Rev. 6/96)
- 25) SCE Division Order 50.20, Relay and Equipment Tests (Rev. 3/94)
- 26) System Operating Bulletin 1-A, Thermal Station Start-up and Power System Restoration (Rev. 12/97)
- 27) System Operating Bulletin 254, Emergency Orders—San Onofre Nuclear Generating Station 220 kV (Rev. March 18, 1996)
- 28) SDG&E Control Procedure 1150, Capacity & Energy Emergencies - SDG&E System Emergencies (Rev. 12/97)