Pacific Gas and Electric Company

David H. Oatley
Vice President and
General Manager

Diablo Canyon Power Plant
P.O. Box 56
Avila Beach, CA 93424

805.545.4350
Fax: 805.545.4234

May 29, 2003

PG&E Letter DCL-03-061

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
License Amendment Request 03-07
Revision to Technical Specifications (TS) 3.8.1 "AC Sources – Operating" & 3.8.4 "DC Sources – Operating" Surveillance Requirements

Dear Commissioners and Staff:

In accordance with 10 CFR 50.90, enclosed is an application for amendment to Facility Operating License Nos. DPR-80 and DPR-82 for Units 1 and 2 of the Diablo Canyon Power Plant (DCPP), respectively. This License Amendment Request (LAR) revises TS 3.8.1, "AC Sources - Operating" to allow surveillance testing of the onsite standby emergency diesel generators (DG) during modes in which it is currently prohibited. Specifically, PG&E proposes removing the mode restrictions for the following Surveillance Requirements (SRs): SR 3.8.1.10 (full load rejection test), SR 3.8.1.13 (protective-trip bypass test), and SR 3.8.1.14 (endurance and margin test). This LAR also incorporates changes included in NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification (STS) change TSTF-283, Revision 3. These changes modify the Notes in SRs 3.8.1.8 (transfer of AC sources test), 3.8.1.9 (post accident load rejection test), 3.8.1.11 (simulated loss of offsite power test), 3.8.1.12 (auto-start on safety injection (SI) signal test), 3.8.1.16 (restoration of loads to offsite power test), 3.8.1.17 (verification of test mode override test), 3.8.1.18 (engineered safety feature and auto-transfer load sequencing test), 3.8.1.19 (loss of offsite power plus SI signal response test), 3.8.4.7 (battery service test), and 3.8.4.8 (battery discharge test) to allow performance of the surveillances in order to re-establish operability following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated operability concerns during plant operation.

Enclosure 1 contains a description of the proposed change, the supporting technical analyses, and the significant hazards determination. Enclosures 2 and 3 contain marked-up and revised TS pages, respectively. Enclosure 4 contains the TS Bases changes (for information only) to assist the staff in its review of the proposed changes. Revision to the TS Bases will be implemented pursuant to the TS Bases Control Program, TS 5.5.14, upon approval of this license amendment.

A001

PG&E is submitting this LAR in conjunction with an industry consortium of six plants as a result of a mutual agreement known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the six plants operated by TXU Generation Company LP, Union Electric Company, Wolf Creek Nuclear Operating Corporation, Pacific Gas and Electric Company, STP Nuclear Operating Company, and Arizona Public Service Company. The other members of the group, with the exception of STP Nuclear Operating Company are expected to submit license amendment requests similar to this one. PG&E is the lead plant for this proposed license amendment. Due to design differences between the STARS plants, there may be some differences in the various plants' LARs, particularly for information provided in Enclosure 1. To assist in the review of these multiple LARs, a table is provided in Enclosure 5 "for information only" that provides the major differences between each of these STARS submittals.

The changes proposed in this LAR are not required to address an immediate safety concern. However, in order to support surveillance testing of the Unit 1 DGs prior to refuel outage 12, PG&E requests that this amendment be approved no later than February 15, 2004. PG&E requests the LAR be made effective upon NRC issuance, to be implemented within 60 days from the date of issuance.

Sincerely,

David H. Oatley
Vice President and General Manager – Diablo Canyon

Dxs/4540
Enclosures
cc: Edgar Bailey, DHS
Thomas P. Gwynn
David L. Proulx
Girija S. Shukla
Diablo Distribution

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275 Facility Operating License No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	)	Docket No. 50-323 Facility Operating License No. DPR-82

AFFIDAVIT

David H. Oatley, of lawful age, first being duly sworn upon oath says that he is Vice President and General Manager – Diablo Canyon of Pacific Gas and Electric Company; that he has executed LAR 03-07, "Revision to Technical Specifications (TS) 3.8.1 "AC Sources – Operating" & 3.8.4 "DC Sources – Operating" Surveillance Requirements" on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

David H. Oatley
Vice President and General Manager – Diablo Canyon

Subscribed and sworn to before me this 29th day of May, 2003.

Notary Public
County of San Luis Obispo
State of California

CHUCK MACKEY
Commission # 1397547
Notary Public - California
San Luis Obispo County
My Comm. Expires Feb 1, 2007

EVALUATION

1.0 DESCRIPTION

This letter is a request to amend Facility Operating License Nos. DPR-80 and DPR-82 for Pacific gas and Electric Company's Diablo Canyon Power Plant (DCPP) Units 1 and 2, respectively.

Mode Restriction Elimination

The proposed changes will remove the Mode 1 and 2 restrictions for the following Surveillance Requirements (SRs): SR 3.8.1.10 (full load rejection test), SR 3.8.1.13 (protective-trip bypass test), and SR 3.8.1.14 (endurance and margin test) associated with the emergency diesel generators (DGs). These changes will allow SRs 3.8.1.10, 3.8.1.13 and 3.8.1.14 to be performed for periodic surveillance testing, and/or following planned or unplanned maintenance during plant operation.

TSTF-283 Revision 3 Changes

In addition, the proposed changes modify the Notes in SRs 3.8.1.8 (transfer of AC sources), 3.8.1.9 (single load rejection test), 3.8.1.11 (loss of offsite power test), 3.8.1.12 (safety injection actuation signal test), 3.8.1.16 (synchronizing test), 3.8.1.17 (change-over test), 3.8.1.18 (engineered safety feature and auto-transfer load sequencing test), 3.8.1.19 (combined safety injection actuation signal and loss of offsite power test), 3.8.4.7 (battery service test), and 3.8.4.8 (battery discharge test) to allow performance of the surveillances in order to re-establish operability following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated operability concerns during plant operation. The changes to these Notes are consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification (STS) change TSTF-283, Revision 3.

2.0 PROPOSED CHANGES

Mode Restriction Elimination

The following changes eliminate the Mode 1 and 2 surveillance testing restrictions. Under each bullet the first statement is the existing Technical Specification (TS) Note and the second is the proposed change.

- SR 3.8.1.10 contains the following Note:

  "This Surveillance shall not be performed in MODE 1 or 2 unless required to demonstrate OPERABILITY following unplanned maintenance."

  The Note contained in SR 3.8.1.10 would be removed.

- SR 3.8.1.13 contains the following Note:

  "This Surveillance shall not be performed in MODE 1 or 2."

  The Note contained in SR 3.8.1.13 would be removed.

- SR 3.8.1.14 contains Note 2 which states the following:

  "This Surveillance shall not be performed in MODE 1 or 2 unless required to demonstrate OPERABILITY following unplanned maintenance."

  The Note contained in SR 3.8.1.14 would be removed.

These proposed changes will allow performance of the testing specified by these SRs in all Modes of operation such that the testing will no longer be required to be performed only during plant outages. This will help to reduce the complexity of coordinating work and testing activities during refueling outages and could potentially reduce outage critical path time. The change will also maximize flexibility in responding to an event during shutdown when other engineered safety features (ESF) equipment may be out of service. In addition, this change could potentially avoid a plant shutdown if maintenance (planned or unplanned) performed during power operation results in the need to perform the surveillance to demonstrate operability.

TSTF-283 Revision 3 Changes

The following proposed changes modify the existing TS to allow more flexibility in the DG testing in accordance with TSTF-283, Revision 3. Under each bullet the first statement is the existing TS Note and the second is the proposed change.

- SR 3.8.1.8 contains the following Note:

  "This Surveillance shall not be performed for automatic transfers in MODE 1 or 2."

  The Note contained in SR 3.8.1.8 would be replaced with the following Note:

  "This Surveillance shall not normally be performed for automatic transfers in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.

- SR 3.8.1.9 contains Note 1 which states:

  "This Surveillance shall not be performed in MODE 1 or 2."

  The Note contained in SR 3.8.1.9 would be replaced with the following Note 1:

  "This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.1.11 contains Note 2 which states:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.1.11 would be replaced with the following Note 2:

"This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.1.12 contains Note 2 which states:

  "This Surveillance shall not be performed in MODE 1 or 2."

  The Note contained in SR 3.8.1.12 would be replaced with the following Note 2:

  "This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.1.16 contains the following Note:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.1.16 would be replaced with the following Note:

  "This Surveillance shall not normally be performed in MODE 1, 2, 3 or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. "

- SR 3.8.1.17 contains the following Note:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.1.17 would be replaced with the following Note:

  "This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.1.18 contains the following Note:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.1.18 would be replaced with the following Note:

  "This Surveillance shall not normally be performed in MODE 1, 2, 3 or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.1.19 contains Note 2 which states:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.1.19 would be replaced with the following Note 2:

"This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.4.7 contains Note 2 which states:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.4.7 would be replaced with the following Note 2:

  "This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

- SR 3.8.4.8 contains a Note which states:

  "This Surveillance shall not be performed in MODE 1, 2, 3, or 4."

  The Note contained in SR 3.8.4.8 would be replaced with the following Note:

  "This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced."

Incorporating TSTF-283 for the affected SRs will give the flexibility to perform these Surveillances for the purpose of reestablishing OPERABILITY without having to shut down the associated unit. Performing these Surveillances online can potentially eliminate any transients involved with having to shutdown the associated unit.

The marked up and revised TS pages are provided in Enclosures 2 and 3, respectively. The associated TS Bases will be revised to reflect the changes to these TS. A marked-up copy of the proposed TS Bases changes is provided in Enclosure 4 for information only. TS Bases changes will be implemented in accordance with TS 5.5.14, "Technical Specifications (TS) Bases Control Program," as a part of the implementation of this amendment following NRC approval.

3.0 BACKGROUND

3.1 Description of Class IE Alternating Current (AC) Power System and Emergency Diesel Generators

Diablo Canyon Power Plant (DCPP) is interconnected to PG&E's electric grid system via two 230 kilovolt (kV) and three 500 kV lines emanating from their respective switchyards; these switchyards are physically and electrically separated and independent of each other. The 230 kV system provides startup and standby power, and is immediately available following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained. The 500 kV system provides for transmission of the plant's power output. The 500 kV connection also provides a delayed access source of offsite power after the main generator is disconnected. A combination of either of the 230 kV circuits and one of the 500 kV circuits provides independent sources of offsite power, as required by General Design Criteria (GDC) 17. The other 230 kV and 500 kV circuits provide capability beyond that required to meet minimum NRC regulatory requirements to ensure reliability of the offsite power systems.

DCPP TS 3.8.1, "AC Sources – Operating," specifies control requirements for the Class IE AC electrical power distribution system. The Class 1E AC distribution system for each unit is normally fed by power generated by that unit through the auxiliary transformers. However, as backup, the Class IE AC distribution system can be fed from the two offsite power sources (from the 500 kV system through the auxiliary transformers and from the 230 kV system through the startup transformers) and from onsite vital standby power sources (three DGs for each unit). As required by 10 CFR 50, Appendix A, GDC 17, the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the ESF systems.

The Class 1E AC distribution system for each unit is divided into three independent load groups (designated 4.16 kV buses F, G and H) so that the loss of any one group or bus does not prevent the minimum safety functions from being performed. Each of these load group or buses has connections to two offsite power sources and a single dedicated DG.

A detailed description of the offsite power network and the circuits to the Class 1E buses is found in the DCPP Final Safety Analysis Report (FSAR), Chapter 8.

A single line diagram of the AC distribution system is shown in Figure 1 of this enclosure.

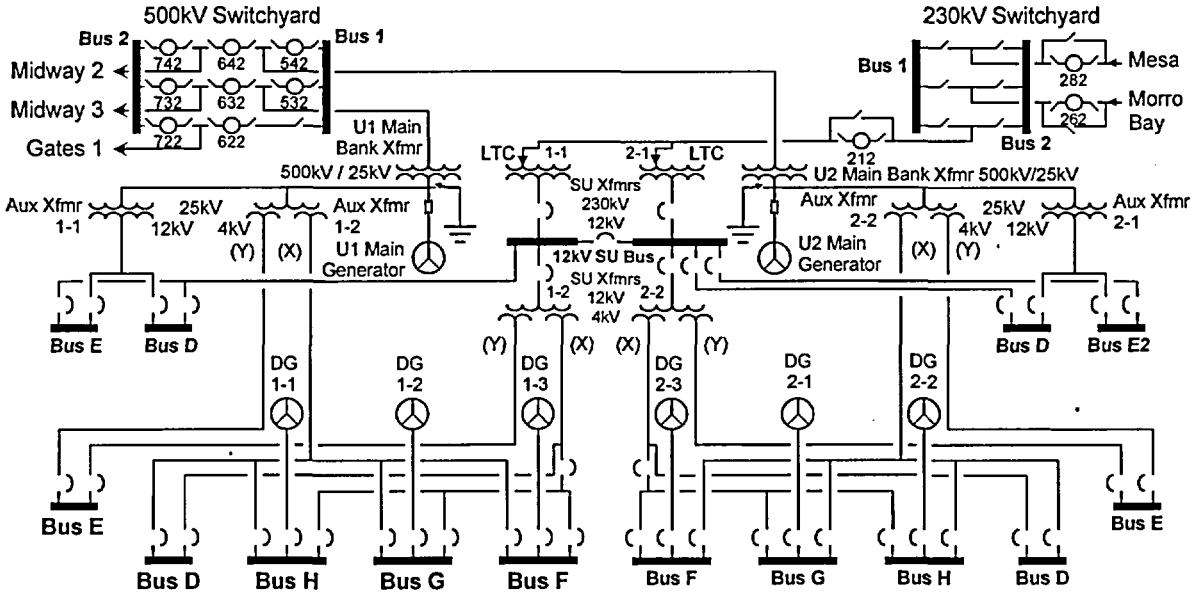

Figure 1
DCPP Electrical Distribution Overview

The onsite standby power source for each Class IE AC bus is a dedicated DG. Each DG automatically starts on a safety injection (SI) signal, undervoltage on the offsite standby startup source, or on a safety-related vital bus degraded voltage or undervoltage signal. After the DG starts, it automatically connects to its respective bus after offsite power is isolated. The DGs also start and operate in the standby mode without connecting to the vital bus on an SI signal alone.

During plant operation with all DGs operable, in the event of a loss of offsite power (LOOP), the DGs start, the loads shed, and the ESF electrical loads are automatically sequentially loaded to the DGs in sufficient time to provide for safe reactor shutdown or to mitigate the consequences of a Design Basis Accident (DBA), such as a loss of coolant accident (LOCA). On a LOOP, an undervoltage signal trips all vital loads and non-permanently connected loads from the vital bus. After the associated DG is connected to the vital bus, the vital loads are sequentially loaded to the vital bus by load sequencing timers. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading the associated DG during the loading process.

The testing configuration for the performance of SR 3.8.1.10 (full load rejection test) and SR 3.8.1.14 (endurance and margin test), allows the DG being tested to be paralleled to the auxiliary transformer and thus to the

500 kV offsite power source. While the DG is paralleled, its operation could be affected by disturbances in the grid. As a result, during this alignment, additional protective trip devices are placed in service to protect the DG from the effects of system disturbances.

During testing of a DG there are two possible scenarios for how the system will react and compensate for a LOOP. The first is if the auxiliary transformer feeder breaker does not trip on a grid fault or unit trip. In this scenario, the DG being tested and paralleled to offsite power would attempt to supply power to the loads on the safety-related and non-safety related 4.16 kV buses and the loads (or fault) on the grid assuming the grid remains connected to the bus. Because the grid loading greatly exceeds the DG capability, bus voltage and frequency would drop significantly. The DG would momentarily respond by raising generator field current via its voltage regulator to support the bus voltage and by increasing the fuel supply to the engine via its governor to support the bus frequency. Ultimately, the DG's protective devices would cause the DG output breaker to trip open on overcurrent isolating the DG from its respective 4.16 kV vital bus and then the auxiliary transformer bus feeder breaker would automatically trip isolating the onsite AC electrical distribution system from a possible grid fault. As a result, the vital bus motor loads will shed. Concurrently, the remaining two DGs, which are in standby, would automatically start on sustained bus undervoltage and pick up their associated buses and loads as necessary. This DG auto-start and load sequence from a standby condition on a LOOP is verified by SR 3.8.1.11 (simulated loss of offsite power test).

In the second scenario if a LOOP occurs and the fault on the grid is isolated by the auxiliary transformer bus feeder breakers via a unit trip before the DG output breaker trips, the DG in test will continue to carry the connected bus and its associated loads. In this scenario if startup power is available from the 230 kV system, then automatic start of the other two DGs would not occur because the undervoltage condition would not be of sufficient duration and magnitude to actuate the undervoltage relays. However, if startup power was not available the other two DGs would start, loads on the buses would shed and the reload sequence would proceed.

In the case of a loss of the normal 500 kV system connection through the auxiliary transformer, DCPP's system is designed to automatically attempt to transfer to the 230 kV system through the startup transformers. This is referred to as a bus transfer. If this transfer is completed within the systems parameters then the standby DGs will not start and are not required to pickup any loads.

If a safety injection signal (SIS) is received during testing with a DG paralleled to offsite power, the auxiliary transformer bus feeder breaker would automatically trip, avoiding any potential overload of the DG that is being tested. With the DG output breaker closed on the DG being tested, a

bus transfer from the auxiliary transformer to the startup transformer, as discussed above, would be prevented. The DG being tested maintains bus voltage so there would be no shedding of loads due to bus undervoltage. Required loads that are not already running would be sequenced onto the bus. The remaining DGs that are in standby, start, all Class 1E 4.16 kV breakers would be tripped, except those permanently connected loads feeding the 480 V transformers, and the shed loads would be sequentially reloaded.

Surveillance 3.8.1.17 verifies that the test mode is overridden for the DG running in test mode and connected to its bus upon the receipt of an SI signal by opening the auxiliary transformer breaker and automatically sequencing the required vital loads onto the DG.

3.2 Description of Direct Current (DC) Power Source

DCPP TS 3.8.4, "DC Sources – Operating," specifies requirements for electrical power distribution system DC sources. The Class 1E DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety-related equipment and backup 120 VAC vital bus power (via inverters). As required by 10 CFR 50, Appendix A, GDC 17, the Class 1E DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure.

The 125 VDC electrical power system consists of three independent safety- related Class 1E DC electrical power subsystems. Each subsystem consists of one 60-cell 125 VDC battery, a dedicated battery charger, and all the associated switchgear, control equipment, and interconnecting cabling. Each subsystem is located in an area separated physically and electrically from the other subsystems to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. Each battery is separately housed in a ventilated room apart from its charger and distribution center.

In addition, two backup battery chargers are installed for the three Class 1E DC subsystems. One backup charger is shared between two Class 1E DC subsystems. The other backup charger is dedicated to the third Class 1E DC subsystem. The backup chargers provide backup service in the event the preferred battery charger is out of service.

During normal operation, the 125 VDC loads are powered from the dedicated battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC loads are automatically powered from the station batteries.

Each of the DC electrical power subsystems provide the control power for its associated Class 1E AC power load group, 4.16 kV switchgear, and 480V load centers. The DC electrical power subsystems also provide DC

electrical power to the inverters, which in turn are backup sources of power for the 120 VAC vital buses.

Each 125 VDC battery has adequate storage capacity to carry the required load for its associated bus continuously for at least 2 hours as discussed in the FSAR, Chapter 8. Each DC electrical power subsystem has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to its fully charged state within 12 hours while supplying normal steady state loads as discussed in the FSAR, Chapter 8.

4.0 TECHNICAL ANALYSES

MODE Restriction Elimination

The current TS Bases for SR 3.8.1.10 and SR 3.8.1.14 state that the reason these SRs cannot be performed in Modes 1 and 2 is to prevent unnecessary perturbations to the electrical distribution systems which could challenge steady state operation and thus plant safety systems. In the current TS Bases, this risk is compared to the risk associated with a shutdown of the unit without the availability of a required DG. As a result in the current TS, these SRs are not allowed to be performed in Mode 1 or 2 unless required to demonstrate operability following unplanned maintenance. However, the following technical analysis shows that although there is a minimal increase in risk involved with performing these SRs in Modes 1 and 2, that increase in risk is insignificant and acceptable.

4.1 SR 3.8.1.10 - Full Load Rejection Surveillance

The historical approach for performance of the load rejection test in SR 3.8.1.10 has been to parallel the DG with auxiliary or startup power while the reactor is in Modes 5 or 6, connect the tested DG to the required load, and then open the DG output breaker. Opening of the DG output breaker separates the DG from its associated vital bus and allows the offsite circuit to continue to supply that bus.

The current surveillance tests are performed in Modes 5 or 6, which require only one of the three DGs and vital buses to be operable. Therefore, the current testing process does not require the DG and vital bus being tested to remain operable. This LAR is proposing that this testing be also allowed in Modes 1, 2, 3 or 4 when all three DGs are required to be operable per Technical Specification 3.8.1.

The concerns associated with performing the full load rejection test in Modes 1-4 are that the DG being tested is susceptible to the effects of grid disturbances, disconnecting the DG while supplying power to the vital buses would cause electrical perturbations on the vital bus, and the DG in test is

more susceptible to tripping due to the extra protection trip relays that are cut in during the test.

Grid Disturbances

Justification for this proposed change is based on the fact that the remaining two DGs would remain operable and are capable of mitigating a DBA. The DG in test is somewhat more susceptible to grid disturbances, and it will be considered inoperable, but available, while paralleled to offsite power. While performing SR 3.8.1.10, the DG in test will place the AC power system into the TS action statement 3.8.1.B – "One DG inoperable". In this action statement, the remaining two DGs are in standby and would be available to automatically respond if they were called upon. The onsite AC power system is fully capable of mitigating a DBA or providing for safe shutdown of the associated unit with the remaining two DGs operable.

Electrical Perturbations

Another concern during this testing is that removing a DG from the associated bus on a full load rejection test would cause a voltage drop on that bus that could potentially perturb the onsite AC electrical system. However, industry experience shows that there is no significant electrical distribution system effect on the associated bus during a full load rejection. Furthermore, during the last refueling outage at DCPP when the DG full load reject SRs were performed on each diesel, the voltage transients experienced by the loads on the associated buses were minor (the worst case was an approximate 1.29 percent change of 54 volts in the bus voltage at the 4.16 kV level, in approximately 0.09 seconds). During this testing there were no recorded voltage oscillations and the voltage change was a smooth step change, which would have no adverse impact on equipment performance. Therefore, performing load reject tests in accordance with SR 3.8.1.10 in any modes would not cause a significant perturbation that would adversely affect the onsite AC electrical system.

Protective Trip Relays

During load rejection testing of DGs, trip features that are not active are cut in to provide additional protection for the DG being tested. These protection features increase the susceptibility of the DG being tested to tripping, therefore the DG is not considered operable. However, these trip features can be manually cut out promptly through operator action in the control room to return the DG to operable status, if necessary. Although the DG being tested is not required to be operable to mitigate a DBA, associated procedures will be revised to instruct operators to cut out these additional protection trip features immediately and return the DG to operable status if a non-emergency trip condition exists. Therefore, these additional trip functions are not considered to be a significant concern during performance of the full load rejection testing while in Modes 1 and 2.

Finally, the proposed test configuration for the full load rejection test is similar to the electrical alignment in the existing monthly run of the DG per SR 3.8.1.3, which is performed during Mode 1. The DG being tested is also decalred inoperable, but available for that test.

4.2 SR 3.8.1.13 Protective-Trip Bypass Test

SR 3.8.1.13 requires verification that non-emergency automatic trip features are bypassed and that the remaining emergency automatic trips will trip the DG as necessary to prevent severe damage to the DG.

This test is performed by testing circuit continuity of the logic relay to measure the change in logic state. Continuity is tested with the non-emergency trip features switch in the cut-out and cut-in positions. During this testing, the DG remains available for an auto-start signal and would load automatically as designed. This test is not performed with the DG running.

The concerns while performing the non-emergency bypass trip test in Modes 1 and 2 are that DG unavailability would occur during part of the test and the additional protective trip features would be in place making the DG more vulnerable to a possible trip.

DG Unavailability

Performing SR 3.8.1.13 in Modes 1 or 2 would still allow the DG in test to respond to an auto-start signal and load automatically. However, it is possible that DG unavailability could occur inappropriately when the DG protective trip features switch is in the cut-in position. For this test, the duration of the DG unavailability is approximately five minutes. During that time the DG would remain capable of starting on an auto-start signal. Based on the short time that a DG remains in this condition, this is considered an insignificant increase in unavailability.

Protective Trip Relays

During the time the non-emergency trip features switch is in the cut-in position the diesel is more vulnerable to trips. However, since the test is performed without the DG running, the DG would have to receive a start signal before it would be vulnerable to additional trips. In the event that an auto start signal is received while performing this test, the DG would still auto-start and the non-emergency protective features switch could be cut out via operator action promptly. Procedures will be revised to instruct operators to immediately cut out this protection features switch and return the DG to operable status if a non-emergency trip condition exists. In the event that the DG being tested is tripped due to these protective features, the DG remains available for manual restart via operator action. Furthermore, the remaining two DGs would be available to mitigate a DBA.

Therefore, performing the non-emergency bypass test online is not a significant concern because the other two operable DGs are capable of

mitigating a DBA; the unavailability of the DG in test is minimal; and procedures would instruct operators to promptly cut-out the protective features switch in an emergency event and reestablish operability of the DG being tested.

4.3 SR 3.8.1.14 - Endurance and Margin Test

The historical approach for performance of the endurance and margin test (24-hour load run) required by SR 3.8.1.14 has been to parallel the DG with the offsite source while the reactor is in MODES 5 or 6, then load and run the DG in test to an overpower condition (110% of its full load rating) for the first two hours. For the remainder of the 24-hour run, the DG is run near its continuous full load rating.

Current surveillance tests are performed in MODES 5 or 6, which require only one out of the three DG to be operable. Thus, current testing does not require the DG being tested to remain operable. This LAR is proposing that this testing also be allowed in Modes 1, 2, 3 or 4 when all three DGs are required to be operable per Technical Specification 3.8.1.

The concerns while performing the endurance and margin test in Modes 1 and 2 are the DG being tested is susceptible to grid disturbances and the additional protective trip features would be in place making the DG more vulnerable to a possible trip.

Grid Disturbances

A concern with performing the endurance and margin test, in Modes 1 and 2, while connected to offsite power (grid), is that the DG is susceptible to grid disturbances. If a fault or power disturbance were to occur while a DG is paralleled to the offsite power system in any mode of operation, the availability of the DG for subsequent emergency operation could be adversely affected due to the potential for common mode vulnerability. Information Notice (IN) 84-69 and Supplement 1 to IN 84-69 provide discussion on the possibility of a grid disturbance causing loss of the availability of the DG being tested because it is parallel to the offsite power system and is susceptible to the same grid disturbances the offsite power system sees. Currently in Modes 5 and 6, during this testing the DG being tested is considered to be inoperable, but available for service with manual operator action. This is acceptable because only one DG is required to be operable in Modes 5 and 6, and at least one of the other two DGs will remain operable to meet that requirement during testing.

In Modes 1, 2, 3 and 4 during this testing TS action statement 3.8.1.B will be entered for one DG inoperable. This is acceptable based on the remaining two DGs being in standby and available to automatically respond if they were called upon. A DBA can be mitigated and safe shutdown provided with the remaining two DGs.

In the case where a disturbance affects the DG being tested, protective devices (i.e. overcurrent relays, differential relays, reverse power) would protect the DG from overcurrent or reverse power. These features will ensure that the DG is protected by causing the DG output breaker to trip separating the DG from its associated bus and assuming that the DG could be quickly restored, making the DG available for restart could be done promptly via operator action.

As a common practice at DCPP, risk management considerations would ensure that this and other SRs would not be scheduled during periods where the potential for grid or bus disturbance exists (storms, grid emergencies, high ocean swelling, etc.). On-line maintenance/testing scheduling and coordination of work activities at PG&E is controlled as required by 10 CFR 50.65(a)(4). Performance of the endurance and margin test per SR 3.8.1.14, in Modes 1 or 2 is also justified, in part, by the fact that PG&E currently tests its DGs paralleled to offsite power during required monthly surveillance testing, SR 3.8.1.3, while at power. SR 3.8.1.3 is required to be performed for a minimum of 60 minutes and is not limited in duration. SR 3.8.1.14 is identical in setup and alignment to SR 3.8.1.3 and differs only in the required duration and the 2-hour peak loading of 110% of continuous rated load.

While the DG is paralleled to an offsite power source for testing several events that could affect the DG being tested are discussed below.

4.3.1 Loss of Offsite Power (LOOP)

In the event of a LOOP while a DG is being tested and is paralleled to offsite power, the DG would remain loaded on its respective bus assuming the auxiliary feeder breaker opens prior to the DG output breaker tripping or the DG would trip on overcurrent to protect itself. Returning the DG to operability by resetting the overcurrent lockout devices would require manual operator action. The remaining two DGs would continue to be available to respond and mitigate a DBA or provide safe shutdown capabilities.

4.3.2 Loss of Coolant Accident (LOCA)

For a LOCA with a SIS initiated while the endurance and margin test is being performed, the auxiliary transformer breaker automatically trips open allowing the DG being tested to continue supplying the 4.16 kV vital bus. In addition, the start-up feeder breaker would lock out to prevent any inadvertent closing. Any loads connected to the 4.16 kV bus before the SI Signal occurs would remain on the bus and the remaining LOCA loads would sequentially auto start and load onto the 4.16 kV bus. The DG would maintain bus voltage so there would be no load shedding due to bus undervoltage. The remaining DGs that are on standby

would operate normally. Therefore, all DGs would remain available to supply their respective 4.16 kV vital buses.

4.3.3 LOOP with LOCA

If a LOCA were to occur immediately following a LOOP, the auxiliary transformer breaker would trip open upon the receipt of a SIS. Any loads on the 4.16 kV bus before the SI Signal would remain on the bus and the remaining LOCA loads would sequence onto the 4.16 kV bus per design. If a LOCA were to occur long enough after the LOOP, and assuming the auxiliary feeder breaker does not open on a unit trip, the DG output breaker would trip open. To return the affected DG to operable would require resetting the overcurrent lockout devices via manual operator action. If a LOOP were to occur after a LOCA, the LOOP would have no effect, as explained above for a LOCA, the DGs would already be providing power to the vital buses and all offsite power sources would be isolated because of the LOCA. During these LOOP with LOCA scenarios the remaining two DGs will be available to respond and mitigate a DBA or provide safe shutdown capability.

Trip Relays

During testing of DGs, non-emergency trip features are cut in to provide additional protection for the DG. These protection features make a DG that is being tested more susceptible to tripping and therefore the DG in test is not considered operable. However, if necessary, cutting out these protection features can be accomplished promptly via operator action. Procedures will be revised to instruct operators to cut out these protection features immediately and return the DG to operable status if a non-emergency trip condition exists. Therefore, these additional trip functions are not a significant concern during performance of the full load rejection test while in Modes 1 and 2. In addition, the remaining two DGs will be available to respond and mitigate a DBA or provide safe shutdown capability.

4.4 Risk Assessment For Full Load Reject and the Endurance and Margin Tests in Modes 1 and 2

Currently when the full load reject and endurance and margin tests are performed they are performed in Modes 5 and 6. When a DG is undergoing the full load rejection test and the endurance and margin test, it is not considered operable, but is available because it can still respond to accident and LOOP events.

Performing these tests in Modes 1, 2, 3, and 4 does not change the potential level of risk during these tests. As in Modes 5 and 6, the DG is considered inoperable per the TS, but available and capable of performing its safety

functions. The determination of availability of the DG in test is consistent with the definition of unavailable in NUMARC 93-01, Revision 3, Appendix B, which states: "SSCs out of service for testing are considered unavailable, unless the test configuration is automatically overridden by a valid starting signal, or the function can be promptly restored either by an operator in the control room or by a dedicated operator stationed locally for that purpose. Restoration actions must be contained in a written procedure, must be uncomplicated (a single actions or a few simple actions), and must not require diagnosis or repair...." Per the above discussion, for these tests the DG in test will remain available per these guidelines. As a result, there is no increase in unavailability of the DG and there is no increase in the risk.

TSTF-283 Revision 3 Changes

The proposed change modifies the Notes in SRs 3.8.1.8 (transfer of AC sources test), 3.8.1.9 (single load rejection test), 3.8.1.11 (loss of offsite power test), 3.8.1.12 (safety injection actuation signal test), 3.8.1.16 (synchronizing test), 3.8.1.17 (test mode change-over test), 3.8.1.18 (engineered safety feature and auto-transfer load sequencing test), 3.8.1.19 (combined safety injection actuation signal and loss of offsite power test), 3.8.4.7 (battery service test), and 3.8.4.8 (battery discharge test) to allow performance of the surveillances or in some cases only portions of the surveillances in the prohibited modes in order to reestablish operability following corrective maintenance. The changes to these Notes are consistent with NRC approved change TSTF-283, Revision 3.

The TS Bases will be revised to allow testing to reestablish operability provided an assessment is performed to assure plant safety is maintained or enhanced. The TS Bases will be updated consistent with TSTF-283 to provide the following guidance relative to this assessment: "This assessment *shall* consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These *shall* be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance, or portions of the Surveillance, is performed in these normally restricted modes. Risk insights or deterministic methods may be used for this assessment."

Conclusion Summary

The proposed changes will provide the flexibility necessary to optimize both outage schedules and the utilization of resources, while still protecting the health and safety of the public and station personnel.

The following are summaries of the bases for these requested modifications and their acceptability:

Mode Restriction Elimination

SR 3.8.1.10 "Full Load Reject Test"

a) The testing is within the rating of all transformers, switchgear, and breakers, both before and after the load rejection;

b) Based on industry experience, this testing has had little impact on the plant electrical distribution system. PG&E tests results show bus voltage data during a full load rejection test are not significant (within 1.29 percent step change) and would be unlikely to cause problems that would impact other busses;

c) The remaining two DGs will remain operable and can supply sufficient power to the bus.

SR 3.8.1.13 "Protective-Trip Bypass Test"

a) The DG would still be capable to respond to an auto-start signal;

b) The unavailability of the DG during the conduct of this test is minimal.

SR 3.8.1.14 "Endurance and Margin Test"

a) The electrical alignment is similar to the existing monthly run of the DG, SR 3.8.1.3;

b) The remaining two DGs will remain operable and can supply sufficient power to the bus;

c) There is no increase in the DG unavailability and no increase in risk.

TSTF-283, Revision 3

a) Changes proposed in this LAR are identical to those in NRC approved TSTF-283;

b) Performance of these SRs during normally restricted modes will require an assessment to assure plant safety is maintained or enhanced;

c) Performance of these SRs during normally restricted modes will only be performed for the purpose of establishing operability.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

Pacific Gas and Electric Company (PG&E) has evaluated whether or not a significant hazards consideration is involved with the proposed changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

The emergency diesel generators (DGs) and their associated emergency loads are accident-mitigating features. As such, testing of the DGs themselves is not associated with any potential accident initiating mechanism. Each DG is dedicated to a specific vital bus and these buses and DGs are independent of each other. There is no common mode failure provided by the testing changes proposed in this license amendment request (LAR) that would cause multiple bus failures. Therefore, there will be no significant impact on any accident probabilities by the approval of the requested amendment.

The design of plant equipment is not being modified by these proposed changes.

The changes include an increase in the online time the DG will be paralleled to the grid in Mode 1 or 2. However, the overall time that the DG is paralleled in all modes (outage /non-outage) should remain unchanged. As such, the ability of the DGs to respond to a design basis accident can be adversely impacted by these proposed changes. However, the impacts are not considered significant based on the ability of the remaining two DGs to mitigate a design bases accident (DBA) or provide a safe shutdown, and data that shows that the DG itself will not perturb the electrical system. Furthermore, the proposed amendments for surveillance requirement (SR) 3.8.1.10 and SR 3.8.1.14 share the same electrical configuration alignment to the current monthly 1-hour loaded surveillance.

For SR 3.8.1.13, the DG would still be able to respond to an auto-start signal were one to be received during testing. The unavailability of the DG during the conduct of this SR 3.8.1.13 is minimal (approximately 5 minutes) and is insignificant from a risk perspective.

In addition, operating experience and evaluation of the probability of a DG being rendered inoperable concurrent with or due to a significant grid disturbance support the conclusion that the proposed changes in this LAR do not involve any significant increase in the likelihood of a safety-related bus blackout.

SR changes that are consistent with Industry/Technical Specification Task Force (TSTF) Standard Technical Specification (STS) change TSTF-283, Revision 3 have been approved by the NRC and the on-line tests allowed by the TSTF are only to be performed for the purpose of establishing operability. Performance of these SRs during normally restricted modes will require an assessment to assure plant safety is maintained or enhanced.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different accident from any accident previously evaluated?

   Response: No.

   The proposed change would create no new accidents since no changes are being made to the plant that would introduce any new accident causal mechanisms. Equipment will be operated in the same configuration currently allowed by other DG SRs that allow testing in plant Modes 1 and 2 and 3. This license amendment request does not impact any plant systems that are accident initiators or adversely impact any accident mitigating systems.

   Therefore, the proposed changes do not create the possibility of a new or different accident from any accident previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

   Response: No.

   The proposed change does not involve a significant reduction in the margin of safety. The margin of safety is related to the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The proposed changes to the testing requirements for the plant DGs do not affect the operability requirements for the DGs, as verification of such operability will continue to be performed as required (except during different allowed modes). Continued verification of operability supports the capability of the DGs to perform their required function of providing emergency power to plant equipment that supports or constitutes the fission product barriers. Consequently, the performance of these fission product barriers will not be impacted by implementation of this proposed amendment.

   In addition, the proposed changes involve no changes to setpoints or limits established or assumed by the accident analysis. On this and the above basis, no safety margins will be impacted.

   Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above evaluation, PG&E concludes that the proposed amendments present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Regulatory Requirements and Guidance

10 CFR 50, Appendix A, GDC 17, "Electric power systems," requirements are summarized below:

Onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies."

The design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the ESF systems. The onsite Class 1E AC Distribution System for each Unit is divided into three load groups so that the loss of any one group does not prevent the minimum safety functions from being performed. Each load group has connections to two offsite power sources and a single DG. Offsite power is supplied to the 230 kV and 500 kV switchyards from the transmission network by two 230 kV transmission lines and three 500 kV transmission lines. These two electrically and physically separated circuits provide AC power, through auxiliary and standby startup transformers, to the 4.16 kV ESF buses.

The potential for failure of the endurance and margin test only exists in the DG being tested. The remaining two DGs will remain operable and in a standby condition during the performance of SR 3.8.1.14 and are not susceptible to a common grid disturbance and a common cause failure.

PG&E recognizes that the affected train of the emergency power system is not independent of disturbances on the offsite power system and any potential interaction with the DG. However, the low probability of having a DG in test concurrent with a significant grid disturbance support the conclusion that the proposed changes in this LAR do not involve any significant increase in the likelihood of a vital bus blackout. During the performance of SR 3.8.1.10 and SR 3.8.1.14 the paralleled DG will be

considered inoperable, but available. The remaining two DGs will remain operable. Furthermore, testing will not be performed under adverse external plant conditions (storms, high grid emergencies, high ocean swelling, etc.) per risk management operation procedures.

In conclusion, the proposed changes continue to support a plant electrical design that meets GDC 17 and based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

PG&E has evaluated the proposed amendments and determined the proposed amendments do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendments meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendments.

7.0 REFERENCES

1. 10 CFR 50.90, "Application for amendment of license or construction permit"
2. TSTF-283, Revision 3, "Modify Section 3.8 Mode Restriction Notes"
3. 10 CFR 50.36(a), "Technical Specifications"
4. 10 CFR, Appendix A, GDC 17, "General Design Criteria for Nuclear Power Plants - Electric Power Systems"
5. Information Notice (IN) 84-69, "Operation of Emergency Diesel Generators"
6. Information Notice (IN) 84-69, Supplement 1, "Operation of Emergency Diesel Generators"
7. NUMARC 93-01, Revision 3, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants".

8.0 PRECEDENTS

The NRC issued License Amendment 173, Subject: Columbia Generating Station Operating License NPF-21 Request for Technical Specifications Amendment to Remove Operating Mode Restrictions for Emergency Diesel Generator Surveillance Testing, dated May 18, 2001.

MARKED-UP TECHNICAL SPECIFICATIONS

Remove Page	Insert Page
3.8-5	3.8-5
3.8-6	3.8-6
3.8-7	3.8-7
3.8-8	3.8-8
3.8-9	3.8-9
3.8-19	3.8-19
3.8-20	3.8-20

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves: a. in ≤ 10 seconds, speed ≥ 900 rpm; and b. in ≤ 13 seconds, voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. normally	184 days
SR 3.8.1.8	----------NOTE---------- This Surveillance shall not be performed for automatic transfers in MODE 1 or 2. Insert 1 ---------- Verify automatic and manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit and manual transfer from the alternate offsite circuit to the delayed access circuit.	24 months
SR 3.8.1.9	----------NOTES---------- normally 1. This Surveillance shall not be performed in MODE 1 or 2. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. Insert 1 ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 63 Hz; b. Within 2.4 seconds following load rejection, the voltage is ≥ 3785 V and ≤ 4400 V; and c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.10 ~~----------NOTE---------- This Surveillance shall not be performed in MODE 1 or 2 unless required to demonstrate OPERABILITY following unplanned maintenance.~~ ---------- Verify each DG operating at a power factor ≤ 0.87 does not trip and voltage is maintained ≤ 5075 V during and following a load rejection of ≥ 2340 kW and ≤ 2600 kW.	24 months
SR 3.8.1.11 ----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ~~normally~~ ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤10 seconds, 2. energizes auto-connected loads through auto-transfer sequencing timers, 3. maintains steady state voltage ≥ 3785 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected loads for ≥ 5 minutes.	24 months

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. normally ---------- Verify on an actual or simulated Safety Injection signal each DG auto-starts from standby condition and: a. In ≤ 13 seconds after auto-start and during tests, achieves voltage ≥ 3785 V and ≤ 4400 V; b. In ≤ 13 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads are energized from the alternate offsite power source; and e. Emergency loads are auto-connected through the ESF load sequencing timers to the alternate offsite power source.	24 months
SR 3.8.1.13	----------NOTE---------- ~~This Surveillance shall not be performed in MODE 1 or 2.~~ ---------- Verify each DG's automatic trips are bypassed when the diesel engine trip cutout switch is in the cutout position and the DG is aligned for automatic operation except: a. Engine overspeed; b. Generator differential current; and c. Low lube oil pressure;	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. ~~This Surveillance shall not be performed in MODE 1 or 2 unless required to demonstrate OPERABILITY following unplanned maintenance.~~ ---------- Verify each DG operating at a power factor ≤0.87 operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 2600 kW and ≤ 2860 kW; and b. For the remaining hours of the test loaded ≥ 2340 kW and ≤ 2600 kW.	24 months
SR 3.8.1.15	----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 2340 kW and ≤ 2600 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts and achieves: a. in ≤ 10 seconds, speed ≥ 900 rpm; and b. in ≤ 13 seconds, voltage ≥ 3785 V, and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.16 Insert 1	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. normally ---------- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;	24 months

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.16 (continued)	b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	
SR 3.8.1.17	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4 normally. ---------- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated Safety Injection signal overrides the test mode by: a. Opening the auxiliary transformer breaker; and b. Automatically sequencing the emergency loads onto the DG.	24 months
SR 3.8.1.18	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4 normally. ---------- Verify each ESF and auto-transfer load sequencing timer is within its limits.	24 months
SR 3.8.1.19	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4 normally. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated Safety Injection signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencing timers,	24 months

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 130 V on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is ≤ 150×10^{-6} ohm for inter-cell connections, ≤ 150×10^{-6} ohm for inter-rack connections, and ≤ 150×10^{-6} ohm terminal connections.	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	24 months
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	24 months
SR 3.8.4.5	Verify battery connection resistance is ≤ 150×10^{-6} ohm for inter-cell connections, ≤ 150×10^{-6} ohm for inter-rack connections, and ≤ 150×10^{-6} ohm for terminal connections.	24 months
SR 3.8.4.6	Verify each battery charger supplies ≥ 400 amps at ≥ 130 V for ≥ 4 hours.	24 months
SR 3.8.4.7	----------NOTES---------- 1. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. normally ---------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	24 months

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. normally ---------- Insert 2 Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 24 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating. AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating.

Insert 1

However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.

Insert 2

However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.

PROPOSED TECHNICAL SPECIFICATIONS PAGE

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves: a. in ≤ 10 seconds, speed ≥ 900 rpm; and b. in ≤ 13 seconds, voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	----------NOTE---------- This Surveillance shall not normally be performed for automatic transfers in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify automatic and manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit and manual transfer from the alternate offsite circuit to the delayed access circuit.	24 months
SR 3.8.1.9	----------NOTES---------- 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 63 Hz; b. Within 2.4 seconds following load rejection, the voltage is ≥ 3785 V and ≤ 4400 V; and c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	Verify each DG operating at a power factor ≤ 0.87 does not trip and voltage is maintained ≤ 5075 V during and following a load rejection of ≥ 2340 kW and ≤ 2600 kW.	24 months
SR 3.8.1.11	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. --- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤10 seconds, 2. energizes auto-connected loads through auto-transfer sequencing timers, 3. maintains steady state voltage ≥ 3785 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected loads for ≥ 5 minutes.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify on an actual or simulated Safety Injection signal each DG auto-starts from standby condition and: a. In ≤ 13 seconds after auto-start and during tests, achieves voltage ≥ 3785 V and ≤ 4400 V; b. In ≤ 13 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads are energized from the alternate offsite power source; and e. Emergency loads are auto-connected through the ESF load sequencing timers to the alternate offsite power source.	24 months
SR 3.8.1.13	Verify each DG's automatic trips are bypassed when the diesel engine trip cutout switch is in the cutout position and the DG is aligned for automatic operation except: a. Engine overspeed; b. enerator differential current; and c. ow lube oil pressure;	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.14	----------NOTE---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. --- Verify each DG operating at a power factor ≤0.87 operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 2600 kW and ≤ 2860 kW; and b. For the remaining hours of the test loaded ≥ 2340 kW and ≤ 2600 kW.	24 months
SR 3.8.1.15	----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 2340 kW and ≤ 2600 kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves: a. in ≤ 10 seconds, speed ≥ 900 rpm; and b. in ≤ 13 seconds, voltage ≥ 3785 V, and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.16	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. --- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.16 (continued)	b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	
SR 3.8.1.17	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated Safety Injection signal overrides the test mode by: a. Opening the auxiliary transformer breaker; and b. Automatically sequencing the emergency loads onto the DG.	24 months
SR 3.8.1.18	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify each ESF and auto-transfer load sequencing timer is within its limits.	24 months
SR 3.8.1.19	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ----------	

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.19 (continued)	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated Safety Injection signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencing timers, 3. achieves steady state voltage ≥ 3785 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months
SR 3.8.1.20	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ----------	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 130 V on float charge.	7 days
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is ≤ 150×10^{-6} ohm for inter-cell connections, ≤ 150×10^{-6} ohm for inter-rack connections, and ≤ 150×10^{-6} ohm terminal connections.	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	24 months
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	24 months
SR 3.8.4.5	Verify battery connection resistance is ≤ 150×10^{-6} ohm for inter-cell connections, ≤ 150×10^{-6} ohm for inter-rack connections, and ≤ 150×10^{-6} ohm for terminal connections.	24 months
SR 3.8.4.6	Verify each battery charger supplies ≥ 400 amps at ≥ 130 V for ≥ 4 hours.	24 months
SR 3.8.4.7	----------NOTES---------- 1. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. --- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 24 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating. AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating.

TS BASES CHANGES
(For Information Only)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from the fuel oil storage tanks to each day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and that controls are configured such that each unit will preferentially receive fuel from a different storage tank while using the other unit's preferred storage as its backup storage.

The Frequency of 31 days is adequate to verify proper operation of the fuel oil transfer pumps and day tank supply valves to maintain the required volume of fuel oil in the day tanks. The frequency has been proven acceptable through operating experience.

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Transfer of each 4.16 kV ESF bus power supply from the normal offsite circuit to the alternate offsite circuit, which is the immediate access 230 kV, demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. Transfer of each 4.16 kV ESF bus power supply from the alternate offsite circuit (immediate access 230 kV) to the delayed access circuit (500 kV circuit) demonstrates the ability of the delayed access circuit. The 24 month Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note. The reason for the Note is that, during operation with the reactor critical, performance of this SR for automatic bus transfers could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. The restriction applies only to automatic bus transfers where a unit trip and reactor trip will occur. This restriction does not apply to manual bus transfers which are a normal action required during a plant startup or shutdown.

Insert A

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 3, 4, 5, or 6.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. The single largest DG load is a centrifugal charging pump (CCP), which is rated at 600 hp. The CCP has a maximum demand, based on the maximum expected horsepower input and motor efficiency, of 515 kW. This Surveillance may be accomplished by:

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or

b. Tripping its associated single largest post-accident load with the DG solely supplying the bus.

c. Simultaneously tripping a combination of loads equal to or greater than the DG's associated single largest post-accident load with the DG solely supplying the bus.

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 2.4 seconds specified is equal to 60% of a typical 4 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. The 24 month Frequency is consistent with the intent of Regulatory Guide 1.108 (Ref. 9). DC 3.8-ED1: added "in that the SR is performed on a Refueling Outage Frequency."

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems.

Insert A

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 3, 4, 5, or 6.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, Note 2 requires that, if synchronized to offsite power, testing must be performed using a power factor ≤ 0.9 lagging. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.

SR 3.8.1.10

This Surveillance demonstrates the DG's capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG would experience following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continue to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a power factor ≤ 0.87 lagging. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.

The 24 month Frequency is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.

~~This SR has been modified by a Note. The reason for the Note is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This risk is compared to the risk associated with a shutdown of the unit without the availability of a required DG. The result is that this SR shall not be performed in MODE 1 or 2 unless required to demonstrate OPERABILITY following unplanned maintenance (Ref. 13).~~

~~Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 3, 4, 5, or 6.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGS during testing. For the purpose of this testing, the DGS must be started from standby conditions, that is, with the engine coolant and oil temperature maintained consistent with manufacturer recommendations of equal to or greater than 90°F but less than 175°F. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems.

Insert B

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 5 or 6.

SR 3.8.1.12

This Surveillance demonstrates that the DG automatically starts and achieves stability by reaching the required voltage and frequency within the specified time (13 seconds) from the Safety Injection actuation signal and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on a Safety Injection signal without loss of offsite power. The emergency loads are the ESF loads.

The requirement to verify the connection of permanent and autoconnected loads to the immediate access 230 kV offsite power system is intended to satisfactorily show the relationship of these loads to the DG loading logic. For a description of the permanent and auto-connected loads, see SR 3.8.1.11 Bases. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 24 months takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGS during testing. For the purpose of this testing, the DGS must be started from standby conditions, that is, with the engine coolant and oil temperature maintained consistent with manufacturer recommendations of equal to or greater than 90°F but less than 175°F. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems.

Insert B

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 3, 4, 5, or 6.

SR 3.8.1.13

This Surveillance demonstrates that DG noncritical protective functions are bypassed when the diesel engine trip cutout switch is in the cutout position and the DG is aligned for automatic operation. The noncritical trips include directional power, loss of field, breaker overcurrent, high jacket water temperature, and diesel overcrank. These noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The 24 month Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

~~The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service.~~

~~Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 3, 4, 5, or 6.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.14

The refueling outage intent of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), requires demonstration once per 24 months that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, ≥ 2 hours of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed using a power factor of ≤ 0.87 lagging. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 24 month Frequency is consistent with the intent of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by ~~two Notes.~~ Note 1 which states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. ~~The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This risk compared to the risk associated with a shutdown of the unit without the availability of a required DG. The result is that this SR shall not be performed in MODE 1 or 2 unless required to demonstrate OPERABILITY following unplanned maintenance (Ref. 13).~~

~~Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 3, 4, 5, or 6.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.16 (continued)

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems.

Insert A

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 5 or 6.

SR 3.8.1.17

Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing. A Safety Injection signal, received while the DG is operating in a test mode, results in the auxiliary breaker opening and the emergency loads automatically sequencing onto the DG.

In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable.

This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The 24 month Frequency is consistent with the intent of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems.

Insert B

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 5 or 6.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.18

Under accident and loss of offsite power conditions, loads are sequentially connected to the bus by load sequencer timers. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The load sequence time interval tolerances ensure that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. The timing limits for the load sequence timers are found in table B3.8.1-1 (ESF Timers) and table B3.8.1-2 (Auto transfer Timers).

With an ESF timer found to be outside the range of acceptable settings, the corresponding DG shall be declared inoperable in MODES 1, 2, 3, and 4, and the corresponding CONDITION followed. With an Auto Transfer timer found to be outside the range of acceptable settings, the corresponding DG shall be declared inoperable for all MODES. This action is necessary only for that time required to open the breaker on the affected load.

The Frequency of 24 months is consistent with the intent of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems.

Insert A

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 5 or 6.

SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with a Safety Injection signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.19 (continued)

The Frequency of 24 months takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of 24 months.

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil temperature maintained consistent with manufacturer recommendations for DGs of equal to or greater than 90°F but less than 175°F. The reason for Note 2 is that the performance of the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems.

Insert B

Preplanned maintenance that would require the performance of this SR to demonstrate operability following the maintenance shall only be performed in Modes 5 or 6.

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9).

This SR is modified by a Note. The reason for the Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil temperature maintained consistent with manufacturer recommendations of equal to or greater than 90°F but less than 175°F.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. FSAR, Chapter 8.
3. Regulatory Guide 1.9, Rev. 3, July 1993.
4. FSAR, Chapter 6.
5. FSAR, Chapter 15.

(continued)

BASES

REFERENCES (continued)

6. Regulatory Guide 1.93, Rev. 0, December 1974.

7. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.

8. 10 CFR 50, Appendix A, GDC 18.

9. Regulatory Guide 1.108, Rev. 1, August 1977.

10. Regulatory Guide 1.137, Rev. 1, Oct 1979.

11. ASME, Boiler and Pressure Vessel Code, Section XI.

12. Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators," May 31, 1994.

13. Diesel Generator Allowed Outage Time Study, LA 44/43, October 4, 1989

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.2 (continued)

damage or abnormal deterioration that could potentially degrade battery performance. The resistance of cell-to-cell connecting cables does not have to be included in measurement of connection resistance.

The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The presence of physical deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

The 24 month Frequency for this SR is based on operational experience related to battery integrity and physical degradation.

SR 3.8.4.4 and [illegible]

No Changes on this Page

Visual inspection [illegible] of intercell, interrack, and terminal connections provide an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anticorrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection. The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR provided visible corrosion is removed during performance of SR 3.8.4.4. The resistance of cell-to-cell connecting cables does not have to be included in measurement of connection resistance for SR 3.8.4.5.

The Surveillance Frequencies of 24 months are based on operational experience related to corrosion and connection resistance trends.

SR 3.8.4.6

This SR requires that each battery charger be capable of supplying 400 amps at ≥ 130 V for ≥ 4 hours. These requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 10), the battery charger supply is required to be

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.6 (continued)

based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

SR 3.8.4.7

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements.

The Surveillance Frequency of 24 months is consistent with the intent of Regulatory Guide 1.32 (Ref. 10) and Regulatory Guide 1.129 (Ref. 11), which state that the battery service test should be performed during refueling operations or at some other outage.

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test.

The modified performance discharge test is a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.7 (continued)

percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test. The modified performance discharge test and service test should be performed in accordance with IEEE-450 (Ref. 9).

The reason for Note 2 is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

SR 3.8.4.8

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

Insert B

A battery modified performance discharge test is described in the Bases for SR 3.8.4.7. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.8; however, only the modified performance discharge test may be used to satisfy SR 3.8.4.8 while satisfying the requirements of SR 3.8.4.7 at the same time.

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 9) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected service life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 24 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is < 90% of the manufacturer's rating. The Surveillance Frequency basis is consistent with IEEE-450 (Ref. 9), except if accelerated testing is required, it will be performed at an 24-month frequency to coincide with a refueling outage.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

Insert B

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-1971.
4. FSAR, Chapter 8.
5. IEEE-485-1978, June 1983.
6. FSAR, Chapter 6.
7. FSAR, Chapter 15.
8. Regulatory Guide 1.93, December 1974.
9. IEEE-450-1995.
10. Regulatory Guide 1.32, February 1977.
11. Regulatory Guide 1.129, December 1974.

No Changes on this Page

Insert A

This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

Insert B

This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

TABLE OF MULTIPLE STARS PLANT LAR SUBMITTAL
(For Information Only)

LIST OF STARS PLANT LAR DIFFERENCES				APPLICABILITY				
DIFF. NO.	SOURCE	LOCATION	DESCRIPTION	COMANCHE PEAK	DIABLO CANYON	PALO VERDE	WOLF CREEK	CALLAWAY
3.8.1.8	TSTF-283	SR 3.8.1.8 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1 and 2 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Neither Wolf Creek nor Callaway has this SR in their TS. In addition, Diablo Canyon new note is very specific to allowing the SR for automatic transfers in Modes 1 and 2.	Yes	Yes	yes	No	No
3.8.1.9	TSTF-283	SR 3.8.1.9 Note	For this SR the Note has been revised to allow performance of this SR in Modes 1 and 2 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Neither Wolf Creek nor Callaway has this SR in their TS.	Yes	yes	yes	No	No
3.8.1.10	Beyond TSTF-283	SR 3.8.1.10 Note	The MODE 1 and 2 restriction for this SR is deleted	Yes	Yes	Yes	Yes	Yes

LIST OF STARS PLANT LAR DIFFERENCES				APPLICABILITY				
DIFF. NO.	SOURCE	LOCATION	DESCRIPTION	COMANCHE PEAK	DIABLO CANYON	PALO VERDE	WOLF CREEK	CALLAWAY
3.8.1.11	TSTF-283	SR 3.8.1.11 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. For Wolf Creek or Callaway this change applies. However, this SR was previously only restricted in Modes 1 and 2, so the change is limited to Modes 1 and 2 in their TS.	Yes	Yes	Yes	Yes	Yes
3.8.1.12	TSTF-283	SR 3.8.1.12 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. For Diablo Canyon, Wolf Creek or Callaway this change applies. However, this SR was previously only restricted in Modes 1 and 2, so the change is limited to Modes 1 and 2 in their TS.	Yes	Yes	Yes	Yes	Yes

LIST OF STARS PLANT LAR DIFFERENCES				APPLICABILITY				
DIFF. NO.	SOURCE	LOCATION	DESCRIPTION	COMANCHE PEAK	DIABLO CANYON	PALO VERDE	WOLF CREEK	CALLAWAY
3.8.1.13	Beyond TSTF-283	SR 3.8.1.13 Note	The MODE 1 and 2 restriction for this SR is deleted	Yes	Yes	Yes	Yes	Yes
3.8.1.14	Beyond TSTF-283	SR 3.8.1.14 Note	The MODE 1 and 2 restriction for this SR is deleted	Yes	Yes	Yes	Yes	Yes
3.8.1.16	TSTF-283	SR 3.8.1.16 Note	For this SR the Note has been revised to allow performance of this SR in Modes 1, 2, 3, and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.	Yes	Yes	Yes	Yes	Yes
3.8.1.17	TSTF-283	SR 3.8.1.17 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. For Wolf Creek or Callaway this change applies. However, this SR was previously only restricted in Modes 1 and 2, so the change is limited to Modes 1 and 2 in their TS.	Yes	Yes	Yes	Yes	Yes

LIST OF STARS PLANT LAR DIFFERENCES				APPLICABILITY				
DIFF. NO.	SOURCE	LOCATION	DESCRIPTION	COMANCHE PEAK	DIABLO CANYON	PALO VERDE	WOLF CREEK	CALLAWAY
3.8.1.18	TSTF-283	SR 3.8.1.18 Note	For this SR the Note has been revised to allow performance of this SR in Modes 1, 2, 3, and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. For Wolf Creek or Callaway this change applies. However, this SR was previously only restricted in Modes 1 and 2, so the change is limited to Modes 1 and 2 in their TS	Yes	Yes	Yes	Yes	Yes
3.8.1.19	TSTF-283	SR 3.8.1.19 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. For Wolf Creek or Callaway this change applies. However, this SR was previously only restricted in Modes 1 and 2, so the change is limited to Modes 1 and 2 in their TS.	Yes	Yes	Yes	Yes	Yes

LIST OF STARS PLANT LAR DIFFERENCES				APPLICABILITY				
DIFF. NO.	SOURCE	LOCATION	DESCRIPTION	COMANCHE PEAK	DIABLO CANYON	PALO VERDE	WOLF CREEK	CALLAWAY
3.8.1.20	Beyond TSTF-283	SR 3.8.1.20 Note	For this SR the Note has been revised to remove the restraint to performing this SR in Modes 1 and 2. This restraint to Modes 1 and 2 are only contained in the Palo Verde TS	No	No	Yes	No	No
3.8.4.6	TSTF-283	SR 3.8.4.6 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. This restraint to Modes 1, 2, 3, and 4 are only contained in the Palo Verde TS	No	No	Yes	No	No
3.8.4.7	TSTF-283	SR 3.8.4.7 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced	Yes	Yes	Yes	Yes	Yes

LIST OF STARS PLANT LAR DIFFERENCES				APPLICABILITY				
DIFF. NO.	SOURCE	LOCATION	DESCRIPTION	COMANCHE PEAK	DIABLO CANYON	PALO VERDE	WOLF CREEK	CALLAWAY
3.8.4.8	TSTF-283	SR 3.8.4.8 Note	For this SR the Note has been revised to allow performance of portions of this SR in Modes 1, 2, 3 and 4 to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced	Yes	Yes	Yes	Yes	Yes