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SUBJECT: Application for amends to licenses DPR-80 & DPR-82, proposing to revise TS 3/4.8.1.1, "AC Sources - Operating," to clarify that EDG testing is initiating from "standby" conditions rather than "ambient" conditions.

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Pacific Gas and Electric Company

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Gregory M. Rueger  
Senior Vice President and  
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Nuclear Power Generation

February 27, 1997



PG&E Letter DCL-97-028

U.S. Nuclear Regulatory Commission  
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Docket No. 50-275, OL-DPR-80  
Docket No. 50-323, OL-DPR-82  
Diablo Canyon Units 1 and 2  
License Amendment Request 97-02: Revision of Technical Specifications  
3/4.8.1.1 and 3/4.3.2

Dear Commissioners and Staff:

Enclosed is an application for amendment to Facility Operating License Nos. DPR-80 and DPR-82. This license amendment request (LAR) proposes to revise Technical Specification (TS) 3/4.8.1.1, "A.C. Sources - Operating," to clarify that emergency diesel generator (EDG) testing is initiated from "standby" conditions rather than "ambient" conditions. This LAR also proposes to revise TS 3/4.3.2, "Instrumentation - Engineered Safety Features Actuation System Instrumentation." This revision clarifies that when one or both of the first level load shed relays, or one or both of the second level undervoltage relays are inoperable, the associated EDG for that bus shall be declared inoperable.

In PG&E Letter DCL-96-238, dated December 30, 1996, PG&E stated that an LAR to propose changes to the EDG ambient temperature starting requirements would be submitted by February 28, 1997. This proposed change is submitted as a corrective step in response to a notice of violation as discussed in PG&E Letter DCL-95-263, dated November 27, 1995.

The changes proposed in this LAR are not required to address an immediate safety concern. PG&E requests that the NRC assign a medium priority for review and approval of this LAR.

ADD 1/1

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P PDR


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PG&E requests that the TS changes become effective immediately upon issuance of the license amendment, to be implemented within 30 days from the date of issuance.

Sincerely,

  
Greg M. Rueger

cc: Edgar Bailey, DHS  
Steven D. Bloom  
James E. Dyer  
Kenneth E. Perkins  
Michael D. Tschiltz  
Diablo Distribution

Enclosures

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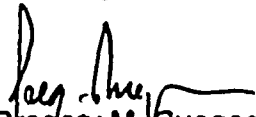
In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	) Docket No. 50-275 ) Facility Operating License ) No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	) Docket No. 50-323 ) Facility Operating License ) No. DPR-82

License Amendment Request  
No. 97-02

Pursuant to 10 CFR 50.90, Pacific Gas and Electric Company hereby applies to amend its Diablo Canyon Power Plant Facility Operating License Nos. DPR-80 and DPR-82 (Licenses). The proposed changes revise Technical Specifications (TS) 3/4.8.1.1, "A.C. Sources - Operating," and 3/4.3.2 "Instrumentation - Engineered Safety Features Actuation System Instrumentation."

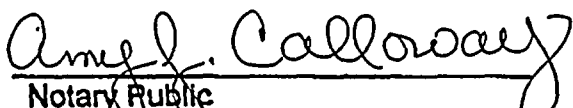
Information on the proposed TS change is provided in Attachments A, B, and C. The change has been reviewed and does not involve a significant hazards consideration as defined in 10 CFR 50.92 or an unreviewed environmental question. Further, there is reasonable assurance that the proposed change will not adversely affect the health and safety of the public.

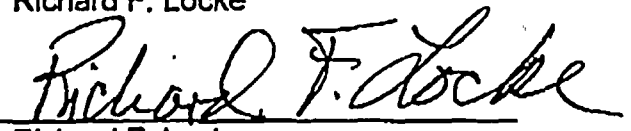
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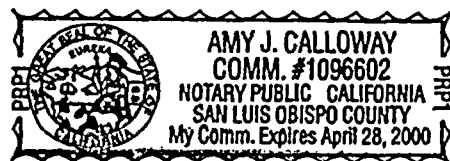
  
Gregory M. Rueger

Subscribed and sworn to before me  
this 27th day of February, 1997

Attorneys for Pacific Gas  
and Electric Company  
Bruce R. Worthington  
Richard F. Locke

  
Notary Public

  
Richard F. Locke





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**REVISION OF TECHNICAL SPECIFICATION  
3/4.8.1.1, "A.C. SOURCES - OPERATING," AND  
3/4.3.2 "INSTRUMENTATION - ENGINEERED SAFETY FEATURES  
ACTUATION SYSTEM INSTRUMENTATION"**

**A. DESCRIPTION OF AMENDMENT REQUEST**

This license amendment request proposes to change Technical Specifications (TS) 3/4.8.1.1, "A.C. Sources - Operating," and 3/4.3.2 "Instrumentation - Engineered Safety Features Actuation System Instrumentation," as follows:

1. The requirement in TS 4.8.1.1.2a.2 will be revised to require that the emergency diesel generator (EDG) be started from standby conditions rather than ambient conditions. The associated TS Bases will be revised to discuss the temperature range that satisfies EDG standby conditions.
2. TS 3.3.2, Table 3.3-3, "Engineered Safety Features Actuation System Instrumentation," Functional Units 7.a.2) and 7.b.1) will be revised to reference a new Action Statement 15. New Action Statement 15 would require that for either one or two relays per bus inoperable, the associated EDG shall be declared inoperable.

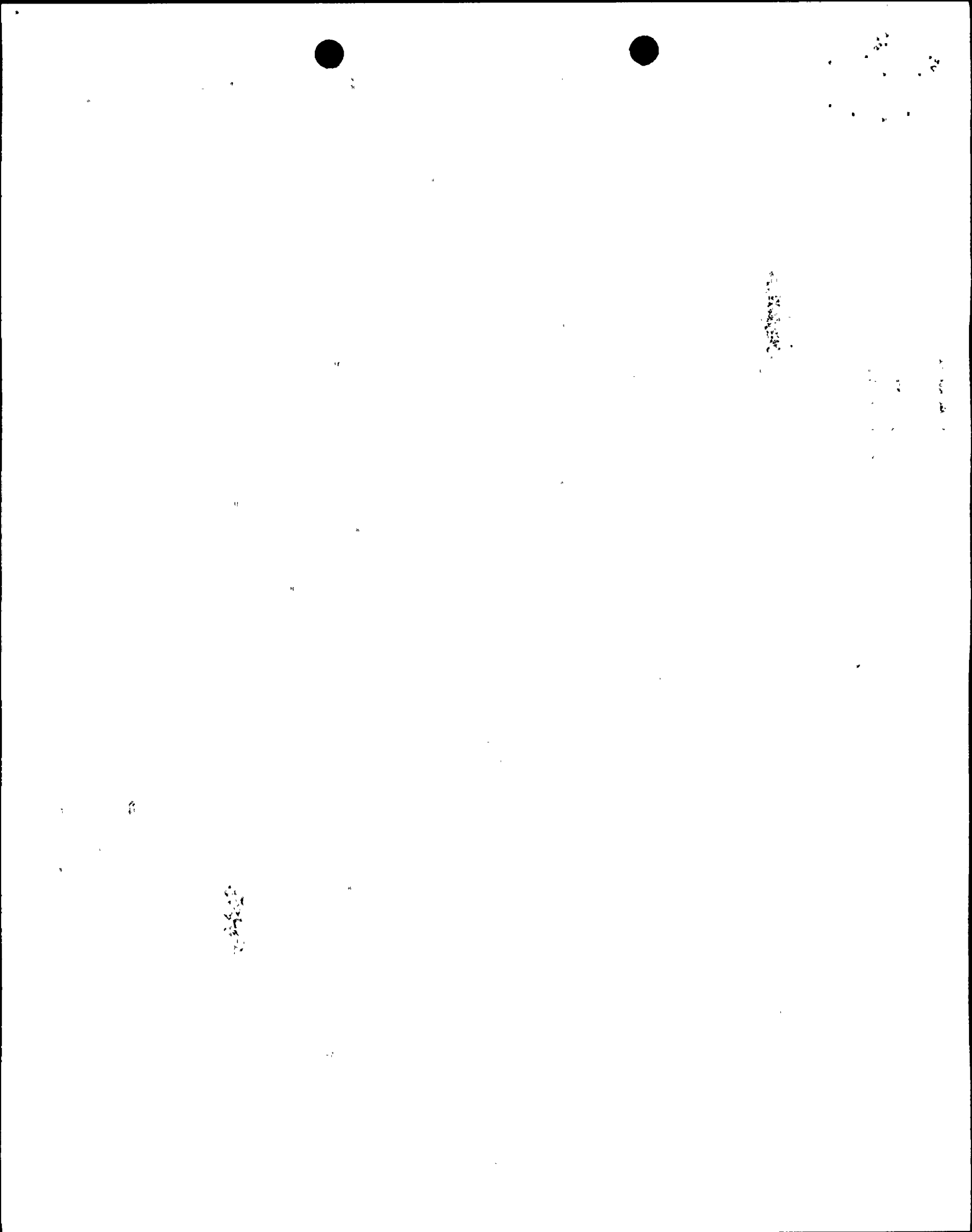
The proposed changes are provided in the marked-up copies of the TS pages in Attachment B. The proposed new TS pages are provided in Attachment C.

**B. BACKGROUND**

EDG Standby Conditions

Each unit of the Diablo Canyon Power Plant (DCPP) is provided with three independent, automatic starting EDGs that supply power to essential loads if normal power sources are not available.

When shut down, each EDG is normally maintained in a standby condition by means of two warming systems. Lubricating oil is warmed and continually circulated by means of a precirculating oil system. In addition, the jacket water is kept warm with thermostatically controlled immersion heaters. At other times, such as during outages or maintenance periods, EDG temperature may be outside the range



provided by the warming systems, but within an acceptable temperature range established by vendor recommendations and PG&E test results.

TS 4.8.1.1.2a.2 requires that the EDGs be started from ambient conditions. This implies that the EDGs must be started at room temperature. However, the jacket water and lube oil warming systems are normally in operation or, if not, the EDG temperatures are within an acceptable range. A more accurate term to describe the conditions in which it is acceptable to start the EDGs is "standby condition."

NUREG-1431, Revision 1, "Standard Technical Specifications - Westinghouse Plants," states that for the purpose of EDG testing, the EDGs are to be started from standby conditions; that is, with the engine coolant and lube oil continuously circulated and temperature maintained consistent with manufacturer recommendations.

Regulatory Guide (RG) 1.9, Revision 3, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Plants," Section 1.5, states in part:

"Emergency diesel generator units should be designed to be testable...The design should include provisions so that testing of the units will simulate the parameters of operation..., normal standby conditions, and environments... that would be expected if actual demand were placed on the system. If prewarm systems designed to maintain lube oil and jacket water cooling at certain temperatures or prelubrication systems or both are normally in operation, this would constitute normal standby conditions for that plant."

#### 4 kV Bus Undervoltage Relays

Two levels of undervoltage detection and automatic transfer are provided for the 4 kV (4160V) vital buses to transfer vital loads to the EDGs in the event of an undervoltage condition.

The first level of undervoltage protection detects the loss of bus voltage (< approximately 69 percent bus voltage) and has sufficient time delay to allow the transfer of the vital buses to the startup transformer. Two first level undervoltage load shed relays (FLURs), one instantaneous and one time delayed, are used to prevent spurious transfers. EDGs are automatically started on sustained bus undervoltage (approximately 0.7



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seconds at 0 volts). If the transfer to the startup transformer is unsuccessful, the first level undervoltage relays will shed the vital bus motor loads. After the EDG breaker closes, the vital bus loads are started by individual load sequencing timing relays.

In response to a grid undervoltage condition at another plant, noted in an NRC letter dated June 6, 1977, each 4 kV vital bus was provided with a second level of undervoltage relay (SLUR) protection to detect voltages under 3785V. The 3785V setting is based on requirements that there be a minimum of 90 percent voltage at the 120V vital loads.

Once second level undervoltage is detected by the undervoltage relays, timing relays provide two sequential time delays for EDG starting and loading. The EDGs are started after a delay of approximately 10 seconds. After an additional delay of approximately 10 seconds, all 4160V motors are shed in preparation for EDG loading. EDG breaker closing is delayed approximately two more seconds to allow the motor breakers to trip and bus voltage to decay. After the EDG breaker closes, the vital bus loads are started by individual load sequencing timing relays.

TS 3.3.2, Table 3.3-3, Functional unit 7, "Loss of Power (4.16kV Emergency Bus Undervoltage)," Section 7.a.2) "First Level - Initiation of Load shed," and Section 7.b.1), "Second Level - Undervoltage Relays," lists the total number of channels as 2/bus and the minimum number of channels operable as 2/bus. The action associated with this requirement (Action 16) states:

"With the number of OPERABLE channels one less than the Total Number of Channels, declare the affected Emergency Diesel Generator(s) inoperable and comply with ACTION statements of Specification 3.8.1.1; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1."

The action statements for TS 3.8.1.1 require verification of operability of the offsite power sources within one hour and once per eight hours thereafter, and verification of operability of the remaining EDGs.

There is no stated action for a condition where both load shed FLURs or both SLURs are inoperable. This could imply that the plant would be in a TS 3.0.3 action statement which contains a one hour limiting condition for operation. However, having two load shed FLURs or two SLURs



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inoperable affects only one vital 4 kV bus and its associated equipment. TS 3.0.3 is intended to place the plant in a safe configuration when no other action statement is applicable. However, in the case of TS 3.3.2, Action Statement 16, application of TS 3.0.3 would result in placing the plant in a transient condition due to an unnecessary shutdown. Requiring an unnecessary plant shutdown is a transient condition that increases a risk of an accident.

The load shed FLUR and SLUR contacts are each connected in series for two-out-of-two logic, and both FLUR or both SLUR relays are required to actuate to cause a bus transfer to the EDG. This assures that a single failure of a load shed FLUR or SLUR does not cause an unnecessary transfer of the vital buses to the EDGs.

Since both load shed FLUR or both SLUR relays are required to be operable to cause an undervoltage actuation, entry into Action Statement 16 recognizes that the undervoltage function will not operate. Inoperability of the second relay does not result in a change of conditions recognized by the action statement. Consequently, Action Statement 16 of TS 3.3.2 should be applied to the condition of both the load shed FLURs or SLURs being inoperable rather than applying TS 3.0.3.

## C. JUSTIFICATION

### EDG Standby Conditions

The revision of TS 4.8.1.1.2a.2 clarifies that the EDG must be started from standby conditions. Replacement of the term "ambient" with "standby" clarifies the TS, and more accurately describes the condition in which the EDGs are maintained, and would be required to start under an accident condition. It also makes use of the full temperature range in which EDG starting time is not affected.

This proposed change would reduce the time required between EDG tests and would reduce the overall time the EDGs are unavailable during refueling outages. For example, in previous outages EDGs have had to be allowed to cool down to ambient following one test before being allowed to be started for the next test. This proposed change is considered a clarification and is consistent with guidance contained in NUREG-1431, Revision 1, and RG 1.9, Revision 3.

The proposed change to TS 4.8.1.1.2a.2 to perform EDG starts from standby conditions, rather than ambient, is similar to license amendments



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previously approved for Seabrook, Unit 1, and Millstone, Unit 3. The proposed change to TS Bases 3/4.8.1 to define standby temperatures as between 90°F and 175°F is based on vendor recommendations and PG&E test results.

#### 4 kV Bus Undervoltage Relays

There is no stated action for two inoperable load shed FLUR or SLUR channels. TS 3.0.3 should be entered with both load shed FLUR or both SLUR channels inoperable. However, having two load shed FLUR or SLUR channels inoperable affects only one vital 4 kV bus and its associated equipment.

Revision of TS 3.3.2 is needed to clarify the correct actions to take when two load shed FLUR or SLURs are inoperable. This clarification was included in PG&E TS Interpretation (TSI) 96-05 for SLURs, and is being submitted to allow elimination of the TSI and to assure that the plant is not placed in an unnecessary transient by requiring an unnecessary reactor shutdown.

This proposed change is considered a clarification and is consistent with guidance contained in NUREG-1431, Revision 1.

#### D. SAFETY EVALUATION

##### EDG Standby Conditions

The EDGs are normally maintained at a temperature of approximately 90°F to 120° by the lube oil and jacket water warming systems. At other times, such as during refueling outages or maintenance periods, the EDG temperatures may be elevated due to previous operation.

PG&E has reviewed test data for approximately 500 EDG surveillance test runs conducted at DCPD between 1989 and 1995. The data shows that EDG start times are unaffected when the initial jacket water and/or the lubricating oil temperatures are between 81°F and 175°F. Also, the EDG manufacturer has stated that EDG start times will not be affected by lube oil or jacket water temperatures above 65°F, but recommends that they be kept above 90°F due to lube oil filter crush concerns. Consequently, PG&E proposes to revise the TS Bases to define standby conditions for EDG surveillance testing as requiring the lubricating oil and jacket water temperatures to be between 90°F and 175°F.



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Ensuring that the DCPD EDGs are maintained in a standby condition, consistent with the manufacturer's recommendations, will ensure that the EDGs are capable of starting and fulfilling their safety function. Since the EDGs would be in the standby condition when called on to start in an actual emergency, this is the appropriate condition from which to initiate EDG testing.

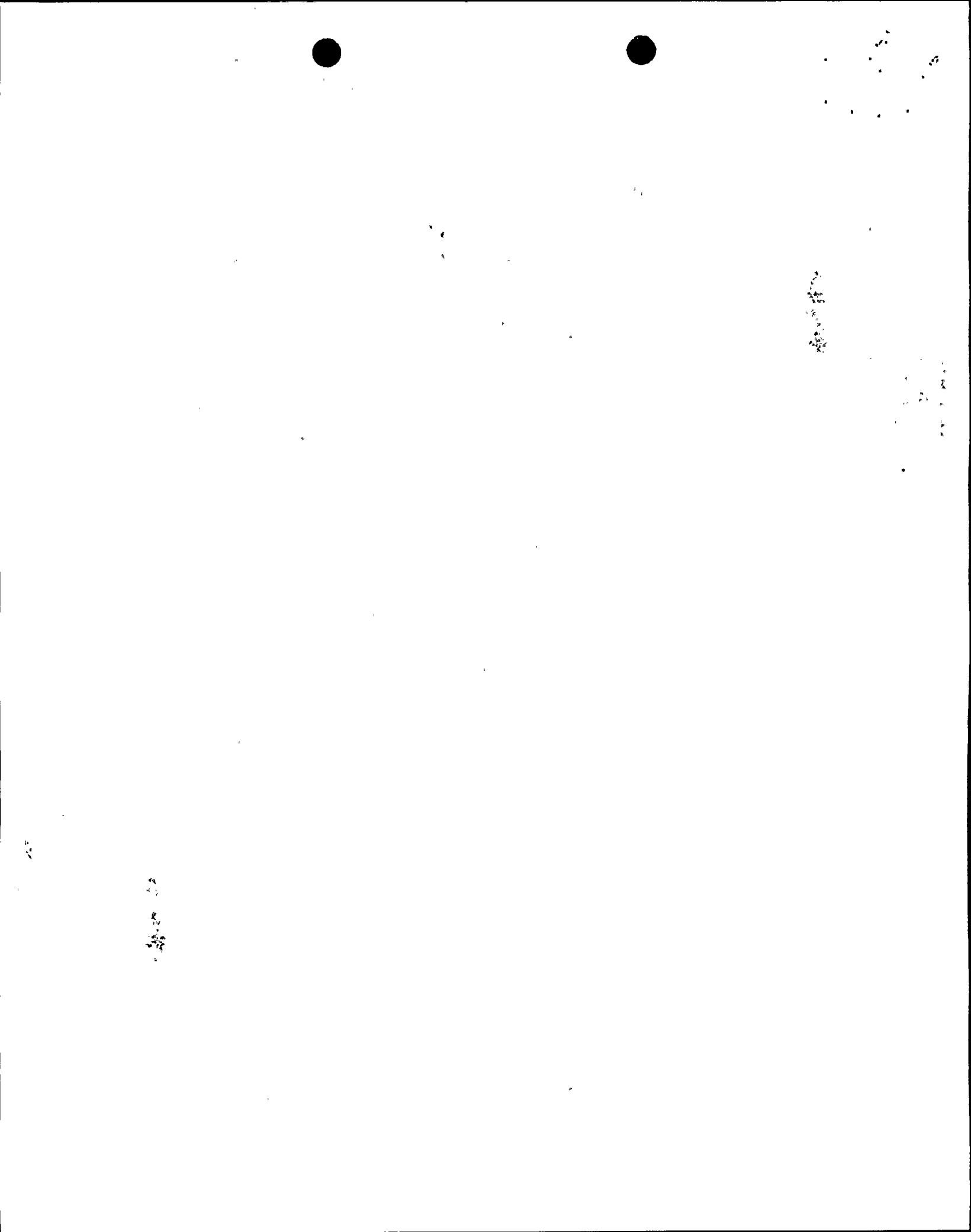
The proposed change to the TS will clarify the initial conditions for testing EDGs in accordance with TS 4.8.1.1.2a.2, and update the Bases to clarify the conditions required for an EDG to remain operable should the keep warm systems become inoperable. These conditions will require that, should the engine keep warm systems become inoperable, the lube oil and jacket water temperatures must be maintained above 90°F for EDG operability.

#### 4 kV Bus Undervoltage Relays

The first level of undervoltage protection for each vital 4 kV bus detects the loss of bus voltage (< approximately 69 percent bus voltage). The load shed relay protection consists of two load shed FLURs for each bus that have a two-out-of-two logic arrangement. Both load shed FLURs must activate for the 4 kV vital bus transfer to EDG to occur. If either one or two load shed FLURs are inoperable, the response is the same; the transfer of the associated 4 kV vital bus to EDG will not occur. Since having either one or two load shed FLURs for a vital 4 kV bus inoperable has the same affect on the 4 kV bus, the TS action statement for two load shed FLURs inoperable should be the same as for one load shed FLUR inoperable.

The second level of undervoltage protection for each vital 4 kV bus is set to protect the buses when voltage drops below 3785V. The protection consists of two SLURs for each bus that have a two-out-of-two logic arrangement. Both SLURs must activate for the 4 kV vital bus transfer to EDG to occur. If either one or two SLURs are inoperable, the response is the same; the transfer of the associated 4 kV vital bus to EDG will not occur. Since having either one or two SLURs for a vital 4 kV bus inoperable has the same affect on the 4 kV bus, the TS action statement for two SLURs inoperable should be the same as for one SLUR inoperable.

The proposed change to TS 3.3.2, Table 3.3-3, will provide time to restore the load shed FLURs or the SLURs to operable status that is consistent with times allowed for outage of other safety-related equipment affecting



one train of vital equipment . The load shed FLURs sets and SLUR sets for one 4 kV bus only affect one train of vital equipment. If an accident occurred while the relays were inoperable, the redundant trains (two remaining EDGs and vital buses) would complete the safety function. The proposed allowed outage time (AOT) for the load shed FLURs and SLURs is bounded by the time allowed for an EDG supporting the vital 4 kV bus and is consistent with AOTs for other safety-related components.

E. NO SIGNIFICANT HAZARDS EVALUATION

PG&E has evaluated the no significant hazards considerations (NSHC) involved with the proposed amendment, focusing on the three standards set forth in 10 CFR 50.92(c) as set forth below:

*"The commission may make a final determination, pursuant to the procedures in paragraph 50.91, that a proposed amendment to an operating license for a facility licensed under paragraph 50.21(b) or paragraph 50.22 or for a testing facility involves no significant hazards considerations, if operation of the facility in accordance with the proposed amendment would not:*

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or*
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or*
- (3) Involve a significant reduction in a margin of safety."*

The following evaluation is provided for the NSHCs.

1. *Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?*

The proposed changes to the technical specifications (TS) do not change the function or operation of any plant equipment or affect the response of that equipment if it is called upon to operate.

The proposed change to TS 4.8.1.1.2a.2 and the Bases will clarify the term "ambient conditions" as used in the emergency diesel generator (EDG) surveillance requirement. EDG testing will still be completed on a frequency commensurate with the current TS.



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The proposed change to TS 3.3.2, Table 3.3-3, will permit time to restore the load shed first level undervoltage relays (FLURs) and second level undervoltage relays (SLURs) to operable status that is consistent with times allowed for outage of other safety-related equipment affecting one train of vital equipment. This proposed change maintains a high degree of equipment availability without requiring unnecessary initiation of a plant shutdown for partial equipment outages.

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

2. *Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?*

The proposed change to TS 4.8.1.1.2a.2 and the Bases will clarify the term "ambient conditions" as used in the EDG surveillance requirement. EDG testing will still be completed on a frequency commensurate with the current TS, and will be more representative of the conditions under which the EDGs would be required to start in an accident condition.

The proposed change to TS 3.3.2, Table 3.3-3, will provide time to restore the load shed FLURs and SLURs to operable status that is consistent with times allowed for outage of other safety-related equipment affecting one train of vital equipment. The load shed FLUR and SLUR sets for one 4 kV bus only affect one train of vital equipment. If an accident occurred while the relays were inoperable, the redundant trains (two remaining EDGs and vital buses) would complete the safety function. The proposed allowed outage time (AOT) for the load shed FLURs and SLURs is bounded by the time allowed for an EDG supporting the vital 4 kV bus and is consistent with AOTs for other safety-related components.

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

3. *Does the change involve a significant reduction in a margin of safety?*

The proposed change to TS 4.8.1.1.2a.2 and its Bases, clarifies the term "ambient conditions" as used in the EDG surveillance requirement. EDG testing will still be completed on a frequency



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commensurate with the current TS. Use of temperatures in the standby range result in no significant variation in EDG start times as indicated by the diesel vendor and by PG&E test results. Standby conditions are representative of actual starting conditions that would be in effect if the EDGs started in an accident.

The proposed change to TS 3.3.2, Table 3.3-3, will provide time to restore the load shed FLURs and SLURs to operable status that is consistent with times allowed for outage of other safety-related equipment affecting one train of vital equipment. If an accident occurred while the relays were inoperable, the redundant train (two remaining EDGs and vital buses) would complete the safety function. The proposed change eliminates an unnecessary plant shutdown and associated risk due to the shutdown transient. It prevents a transient that could require the EDGs at a time when less than all three EDGs would be operable.

Therefore, neither of the proposed changes involves a significant reduction in a margin of safety.

#### F. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Based on the above safety evaluation, PG&E concludes that the changes proposed by this LAR satisfy the NSHC standards of 10 CFR 50.92(c), and accordingly a no significant hazards finding is justified.

#### G. ENVIRONMENTAL EVALUATION

PG&E has evaluated the proposed changes and determined the changes do not involve: (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.



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