

## ENCLOSURE

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )

PACIFIC GAS AND ELECTRIC COMPANY )

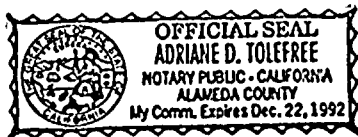
Diablo Canyon Power Plant )  
Units 1 and 2 )Docket No. 50-275  
Facility Operating License  
No. DPR-80Docket No. 50-323  
Facility Operating License  
No. DPR-82License Amendment Request  
No. 90-10

Pursuant to 10 CFR 50.90, Pacific Gas and Electric Company (PG&E) hereby applies to amend its Diablo Canyon Power Plant (DCPP) Facility Operating License Nos. DPR-80 and DPR-82 (Licenses).

The proposed change amends the Technical Specifications (Appendix A of the Licenses) in regards to Technical Specification 3/4.2.4. Information on the proposed changes is provided in Attachments A and B.

This change has been reviewed and is considered not to involve a significant hazards consideration as defined in 10 CFR 50.92 or require an environmental assessment in accordance with 10 CFR 51.22(b). Further, there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change.

Subscribed to in San Francisco, California this 18th day of October 1990.



Howard V. Golub  
Richard F. Locke  
Attorneys for Pacific  
Gas and Electric Company

Respectfully submitted,

Pacific Gas and Electric Company

By

*J. D. Shiffer*  
J. D. Shiffer  
Senior Vice President and  
General Manager  
Nuclear Power Generation

Subscribed and sworn to before me  
this 18th day of October 1990

By

*Richard F. Locke*  
Richard F. Locke

*Adriane D. Tolefree*  
Adriane D. Tolefree, Notary Public  
for the County of Alameda,  
State of California

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My commission expires December 22, 1992.



## Attachment A

### REVISION OF TECHNICAL SPECIFICATION 3/4.2.4 QUADRANT POWER TILT RATIO DETERMINATION WITH AN INOPERABLE POWER RANGE CHANNEL

#### A. DESCRIPTION OF AMENDMENT REQUEST

This LAR would revise Technical Specification (TS) 3/4.2.4, "Quadrant Power Tilt Ratio", to permit determination of the Quadrant Power Tilt Ratio (QPTR) by either a full incore flux map or by symmetric flux thimble measurement in the event that a single power range channel becomes inoperable above 75 percent Rated Thermal Power (RTP). The existing Diablo Canyon Power Plant (DCPP) TS 3/4.2.4 permits only the use of the four pairs of symmetric core thimbles in this situation.

Changes to the TS are noted in the marked-up copy of the applicable TS (Attachment B).

#### B. BACKGROUND

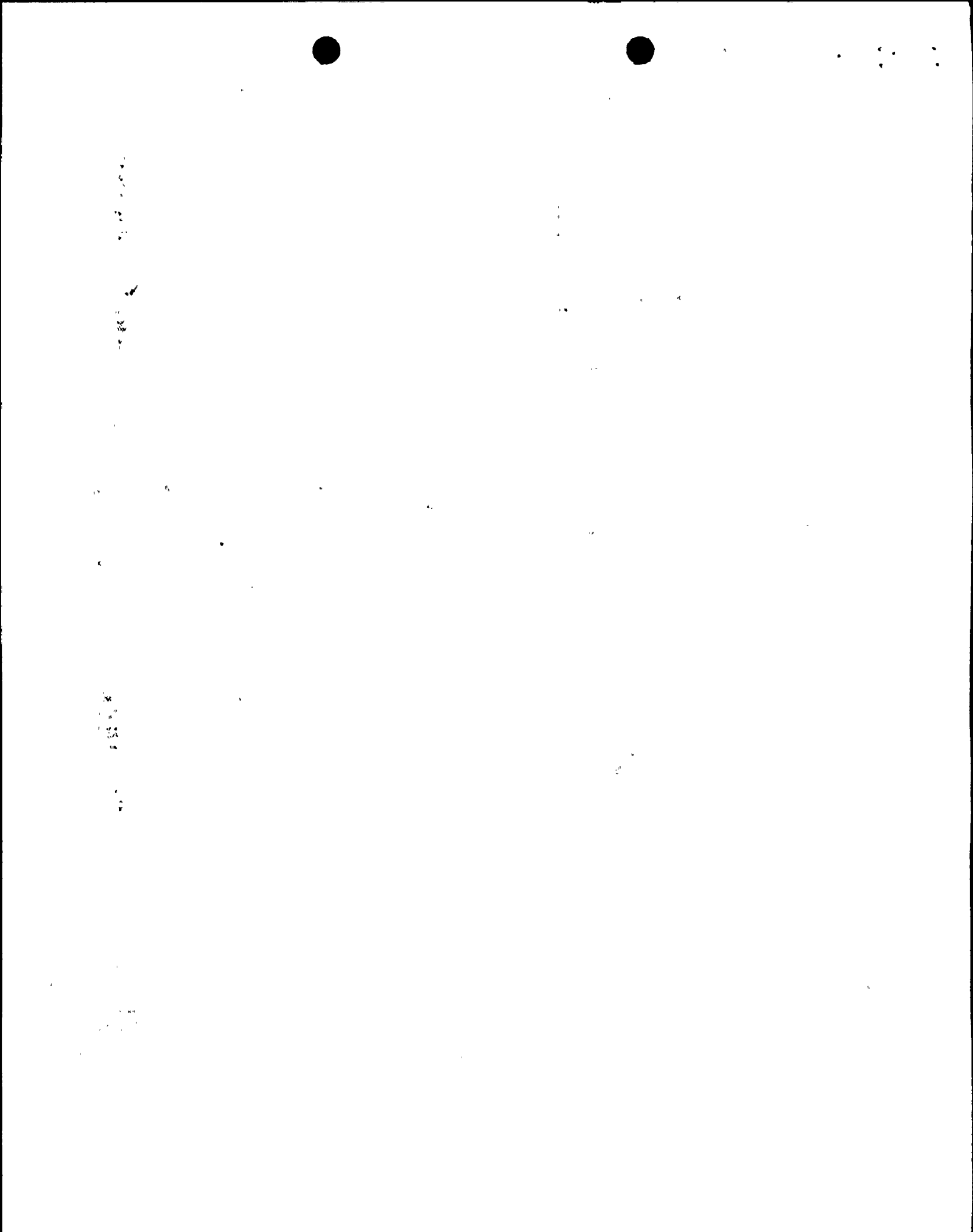
QPTR has the following TS definition:

QUADRANT POWER TILT RATIO shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.

The excore detectors are the sensors for the Nuclear Instrumentation System (NIS). In Mode 1 at greater than 50 percent RTP, the NIS continuously monitors the QPTR. A control room annunciator will sound when QPTR exceeds 1.02, warning of a change in the gross radial power distribution of the core. It is important that changes do not go undetected and invalidate the radial power distribution assumed in the accident analyses.

The Movable Incore Detector System (MIDS), or Flux Mapping System, is used to measure the actual core power distribution. The MIDS consists of nuclear detectors, detector drive units and thimble tubes. The thimble tubes extend to the tops of 58 reactor fuel assemblies, and allow the drive units to insert the MIDS detectors into the reactor core.

A full incore map and a symmetric thimble map are two of the flux mapping methods referred to in the DCPP Technical Specifications and plant procedures. In a full incore map, as many as 58 fuel assemblies are monitored, depending on the number of operable thimbles. The full incore map provides the most accurate representation of power distribution and is used for the monthly hot channel factor surveillance.



In a symmetric thimble map, eight of the core's fuel assemblies are monitored. This map is used to verify that the actual radial power distribution is consistent with the NIS-measured QPTR when one power range channel is inoperable above 75 percent RTP. When a single NIS power range channel becomes inoperable, tilt monitoring for that quadrant of the core is lost and measurement ability is accordingly degraded. Note that all eight symmetric thimbles must be operable for the performance of a symmetric thimble map.

There is both an industry and DCPD history of inoperable thimbles. During the third refueling outage on Unit 2, three thimbles were capped as a result of wall thinning, leaving these three thimbles inoperable for the fourth fuel cycle. This did not present a flux mapping problem because:

1. TS 3.3.3.2 requires only 75 percent of the thimbles to be operable for monthly hot channel factor surveillance.
2. None of the capped thimbles were the designated symmetric thimbles.

Recently, during the fourth cycle on Unit 2, nine thimbles were rendered inoperable because of a stuck MIDS detector. This resulted in one of the symmetric thimbles being unavailable for flux mapping. Removing the stuck detector was a lengthy process. The development of a special plant procedure and significant planning were required to safely accomplish the task. Five days elapsed before the detector was removed, replaced, and the symmetric thimble was restored to operability.

Power range channel inoperability for reasons other than surveillance testing is not a routine occurrence. Inoperability has occurred at DCPD, however, due to events such as the failure of electronic components. If a channel were to become inoperable in conjunction with a stuck MIDS detector, plant output would have to be reduced to 75 percent RTP and the high flux trip setpoints of the remaining three channels would have to be adjusted downward to 85 percent RTP. Bypassing of the inoperable channel would also be required during bistable adjustments on the operable channels, in order to avoid a reactor trip. These actions would not be necessary if a full incore flux map were permitted in this situation.

#### C. JUSTIFICATION

Permitting determination of QPTR by either a full incore map or by symmetric thimble measurement will avoid:

1. An unnecessary reduction in plant load.
2. A subsequent adjustment of NIS protection bistables.

The proposed change will also provide consistency between the QPTR TS 3/4.2.4 and the MIDS TS 3.3.3.2. The proposed revision has been previously



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licensed at other facilities, including South Texas, Comanche Peak, Farley, and Vogtle. The revision is also consistent with Draft Revision 5 of the Westinghouse Standard Technical Specifications and is currently included in the WOG MERITS Technical Specifications, which are under review by the NRC.

When a single NIS power range channel becomes inoperable, tilt monitoring for that quadrant of the core is lost. Because of this degraded ability, Action 2 of Table 3.3-1 of TS 3/4.3.1, "Reactor Trip Instrumentation", requires that either:

1. The thermal power be restricted to less than or equal to 75 percent of RTP and the Power Range Neutron Flux Trip Setpoint be reduced to 85 percent of RTP within 4 hours; or
2. The QPTR be monitored per Specification 4.2.4.2 when thermal power is greater than or equal to 50 percent of RTP.

TS 4.2.4.2 requires use of the MIDS and the symmetric thimbles to verify that the radial power distribution is consistent with the NIS-measured QPTR. The specification does not currently allow the option of a full incore map in lieu of the symmetric thimbles, even though the full incore map would yield the most accurate core representation. This limitation allows no flexibility in the event that one (or more) symmetric thimbles is inoperable. It is also inconsistent with TS 3.3.3.2, "Movable Incore Detectors", which states that the MIDS is operable for the purpose of monitoring QPTR provided that the following are operable:

1. At least 75 percent of the detector thimbles.
2. A minimum of two detector thimbles per core quadrant.
3. Sufficient movable detectors, drive and readout equipment to map these thimbles.

The Bases for TS 3.3.3.2 also states that either a full incore map or the symmetric thimbles can be used for monitoring QPTR when one power range channel is inoperable.

#### D. SAFETY EVALUATION

The proposed TS change of permitting QPTR determination by a full incore flux map as well as by symmetric thimble measurement is warranted because the full incore map is the most accurate method of determining core power distribution. The proposed change does not affect any FSAR Update accident analyses, require any physical alteration to the plant, nor affect any safety systems.

In conclusion, PG&E believes that there is reasonable assurance that the health and safety of the public will not be adversely affected by the proposed TS change.





#### E. NO SIGNIFICANT HAZARDS

PG&E has evaluated the no significant hazards considerations involved with the proposed amendment, focusing on the three standards set forth in 10 CFR 50.92(c) as quoted 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 a testing facility involves no significant hazards consideration, 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 no significant hazards consideration standards.

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

The proposed revision does not change any of the FSAR Update accident analyses initial conditions or results. Allowing either a full incore flux map or symmetric thimble measurement in the event that a single power range channel becomes inoperable, and one or more symmetric thimbles is unavailable for flux mapping, is warranted because the full incore map provides the most accurate representation of core power distribution and there is no effect on the FSAR Update accident analyses results.

Therefore, the proposed change does 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 previously evaluated?

Allowing either a full incore flux map or symmetric thimble measurement in the event that a single power range channel becomes inoperable and one or more symmetric thimbles is unavailable for flux mapping does not require any physical alteration to any plant system nor does it change the method by which any safety related system performs its function.

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



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

Allowing either a full incore flux map or symmetric thimble measurement in the event that a single power range channel becomes inoperable and one or more symmetric thimbles is unavailable for flux mapping will not change any accident analysis assumptions, initial conditions or results.

Therefore, the proposed change does not involve 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 activities associated with this LAR satisfy the no significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified.

G. ENVIRONMENTAL EVALUATION

PG&E has evaluated the proposed change and determined that the change does 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 change meets the eligibility criterion 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.



Attachment B  
MARKED-UP TECHNICAL SPECIFICATIONS

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## POWER DISTRIBUTION LIMITS

### SURVEILLANCE REQUIREMENTS

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4.2.4.1 The QUADRANT POWER TILT RATIO shall be determined to be within the limit above 50% of RATED THERMAL POWER by:

- a. Calculating the ratio at least once per 7 days when the alarm is OPERABLE, and
- b. Calculating the ratio at least once per 12 hours during steady-state operation when the alarm is inoperable.

4.2.4.2 The QUADRANT POWER TILT RATIO shall be determined to be within the limit when above 75% of RATED THERMAL POWER with one Power Range channel inoperable by using the movable incore detectors to confirm that the normalized symmetric power distribution, obtained from the 4 pairs of symmetric thimble locations, is consistent with the indicated QUADRANT POWER TILT RATIO at least once per 12 hours.

*or from a full incore flux map per specification 3.3.3.2*



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