

January 30, 1987

Docket Nos. 50-275
and 50-323

Mr. J. D. Shiffer, Vice President
Nuclear Power Generation
c/o Nuclear Power Generation, Licensing
Pacific Gas and Electric Company
77 Beale Street, Room 1451
San Francisco, California 94106

Dear Mr. Shiffer:

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Docket File

NRC PDR
Local PDR
PD#3 Rdg.
T. Novak
C. Vogan
H. Schierling
OGC
L. Harmon
OPA
P. Narbut
R. Lobel

E. Jordan
B. Grimes
J. Partlow
T. Barnhart(8)
W. Jones
E. Butcher
N. Thompson
V. Benaroya
ACRS(10)
LFMB
M. Dunenfeld
C. Berlinger

The Commission has issued the enclosed Amendment No. 12 to Facility Operating License No. DPR-80 and Amendment No. 10 to Facility Operating License No. DPR-82 for the Diablo Canyon Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications in response to your application transmitted by letter dated July 18, 1986 (LAR 86-08).

These amendments change the Technical Specifications, Section 3/4.2.1, "Axial Flux Difference", to implement for Unit 2 the Westinghouse developed relaxed axial offset control (RAOC) methodology after Unit 2 has reached a burn up of 8000 MWD/MTU in the first cycle.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly Federal Register notice.

Sincerely,

Hans Schierling, Senior Project Manager
PWR Project Directorate #3
Division of PWR Licensing-A, NRR

Enclosures:

1. Amendment No. 12 to DPR-80
2. Amendment No. 10 to DPR-82
3. Safety Evaluation

cc: w/enclosures
See next page

* SEE PREVIOUS CONCURRENCE

PD#3
CVogan*
12/22/86

PD#3
HSchierling:mak*
12/19/86

OGC*
12/29/86

Handwritten note: PD#3 SVanga - 1/1/87

PD#3
SVanga
1/1/87

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Pacific Gas and Electric Company
77 Beale Street, Room 1451
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These amendments change the Technical Specifications, Section 3/4.2.1, "Axial Flux Difference", to implement for Unit 2 the Westinghouse developed relaxed axial ~~control~~ *control* (RAOC) methodology after Unit 2 has reached a burn up of 8000 MWD/MTU in the first cycle.

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See next page

PD#3
CVogan
12/12/86

PD#3
HSchierling:mak
12/19/86

*No legal objection
APH
12/29/86*

PD#3
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-275
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 12
License No. DPR-80

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment dated July 18, 1986 (LAR 86-08), by Pacific Gas & Electric Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter 1;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by a change to the combined Technical Specifications for Units 1 and 2 as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-80 is hereby amended to read as follows:


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P PDR

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 12 , and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. PG&E shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment becomes effective at the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Director
PWR Project Directorate #3
Division of PWR Licensing-A, NRR

Attachment:
Changes to the Technical
Specifications

Date of Issuance:
January 30, 1987



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT, UNIT 2
DOCKET NO. 50-323
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 10
License No. DPP-82

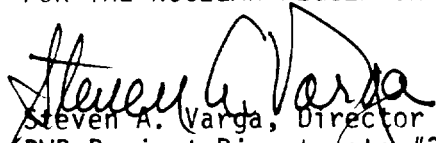
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment dated July 18, 1986 (LAR 85-08), by Pacific Gas & Electric Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter 1;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by a change to the combined Technical Specifications for Units 1 and 2 as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-82 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 10, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. PG&E shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment becomes effective at the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Director
PWR Project Directorate #3
Division of PWR Licensing-A, NRR

Attachment:
Changes to the Technical
Specifications

Date of Issuance:
January 30, 1987



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ATTACHMENT TO LICENSE AMENDMENT NOS.12 AND 10
FACILITY OPERATING LICENSE NOS. DPR-80 AND DPR-82
DOCKET NOS. 50-275 AND 50-323

Revise the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised pages are identified by Amendment Number and contain vertical lines indicating the area of change.

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3/4.2 POWER DISTRIBUTION LIMITS

3/4.2.1 AXIAL FLUX DIFFERENCE

LIMITING CONDITIONS FOR OPERATION

3.2.1 The indicated AXIAL FLUX DIFFERENCE (AFD) shall be maintained within the allowed operational space defined by Figure 3.2-1a for Unit 1, and Figure 3.2-1b for Unit 2.

APPLICABILITY: MODE 1 ABOVE 50 PERCENT RATED THERMAL POWER*.

ACTION:

- a. With the indicated AXIAL FLUX DIFFERENCE outside of the Unit 1 Figure 3.2-1a limits or Unit 2 Figure 3.2-1b limits,
 1. Either restore the indicated AFD to within the Unit 1 Figure 3.2-1a or Unit 2 Figure 3.2-1b limits within 15 minutes, or
 2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 30 minutes and reduce the Power Range Neutron Flux - High Trip setpoints to less than or equal to 55 percent of RATED THERMAL POWER within the next 4 hours.
- b. THERMAL POWER shall not be increased above 50% of RATED THERMAL POWER unless the indicated AFD is within the Unit 1 Figure 3.2-1a or Unit 2 Figure 3.2-1b limits.

SURVEILLANCE REQUIREMENTS

4.2.1.1 The indicated AXIAL FLUX DIFFERENCE shall be determined to be within its limits during POWER OPERATION above 50 percent of RATED THERMAL POWER by:

- a. Monitoring the indicated AFD for each OPERABLE excore channel:
 1. At least once per 7 days when the AFD Monitor Alarm is OPERABLE, and
 2. At least once per hour for the first 24 hours after restoring the AFD Monitor Alarm to OPERABLE status.
- b. Monitoring and logging the indicated AXIAL FLUX DIFFERENCE for each OPERABLE excore channel at least once per hour for the first 24 hours and at least once per 30 minutes thereafter, when the AXIAL FLUX DIFFERENCE Monitor Alarm is inoperable. The logged values of the indicated AXIAL FLUX DIFFERENCE shall be assumed to exist during the interval preceding each logging.

4.2.1.2 The indicated AFD shall be considered outside of its limits when at least 2 OPERABLE excore channels are indicating the AFD to be outside the limits.

*See Special Test Exceptions Specification 3.10.2

UNIT 1

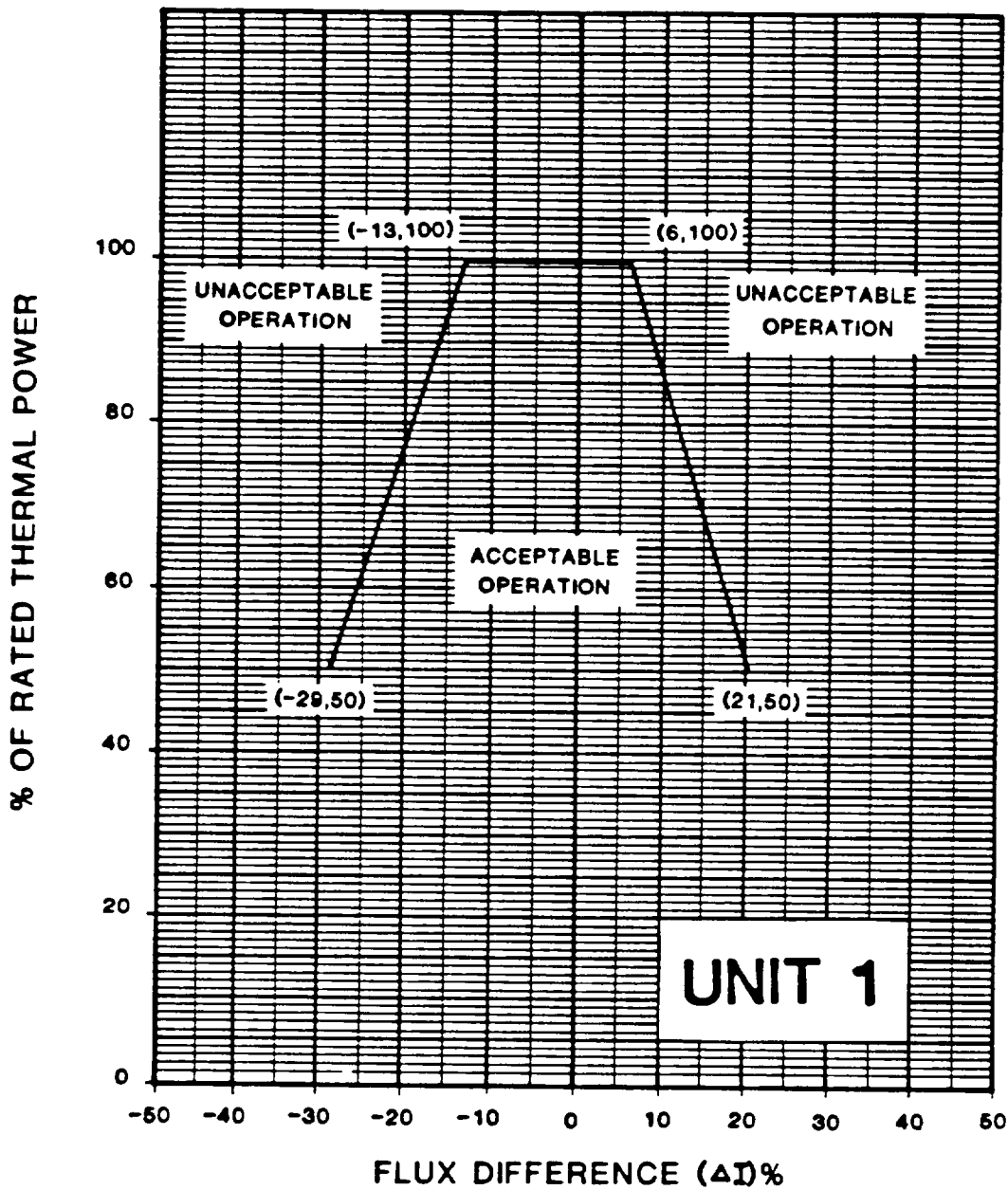


FIGURE 3.2-1a

UNIT 1 AXIAL FLUX DIFFERENCE LIMITS
AS A FUNCTION OF RATED THERMAL POWER

UNIT 2

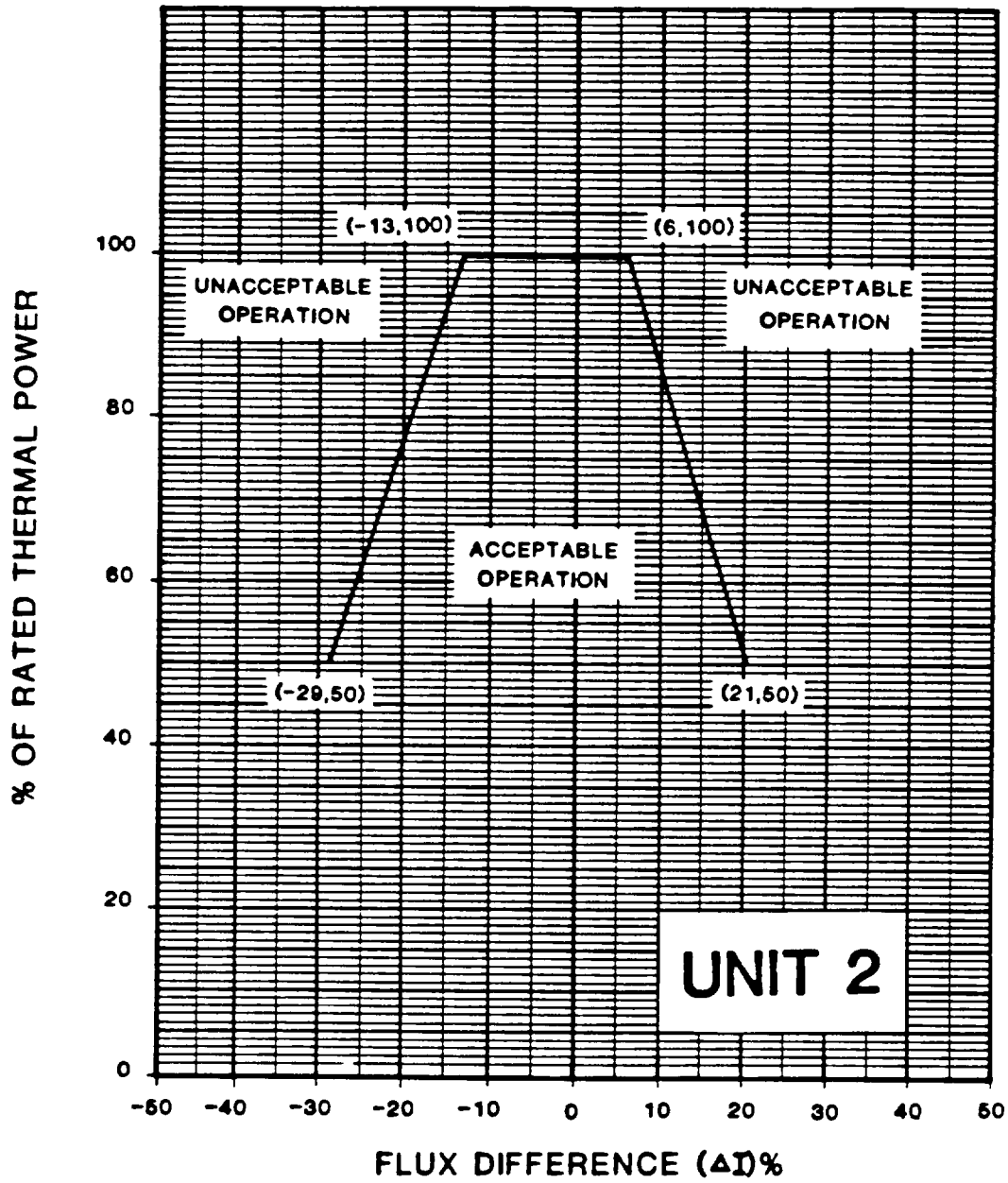


FIGURE 3.2-1b

UNIT 2 AXIAL FLUX DIFFERENCE LIMITS
AS A FUNCTION OF RATED THERMAL POWER

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3/4.2 POWER DISTRIBUTION LIMITS

BASES

The specifications of this section provide assurance of fuel integrity during Condition I (Normal Operation) and II (Incidents of Moderate Frequency) events by: (a) maintaining the minimum DNBR in the core greater than or equal to 1.30 during normal operation and in short term transients, and (b) limiting the fission gas release, fuel pellet temperature and cladding mechanical properties to within assumed design criteria. In addition, limiting the peak linear power density during Condition I events provides assurance that the initial conditions assumed for the LOCA analyses are met and the ECCS acceptance criteria limit of 2200°F is not exceeded.

The definitions of certain hot channel and peaking factors as used in these specifications are as follows:

- $F_Q(Z)$ Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod at core elevation Z divided by the average fuel rod heat flux, allowing for manufacturing tolerances on fuel pellets and rods;
- $F_{\Delta H}^N$ Nuclear Enthalpy Rise Hot Channel Factor, is defined as the ratio of the integral of linear power along the rod with the highest integrated power to the average rod power; and
- $F_{xy}(Z)$ Radial Peaking Factor, is defined as the ratio of peak power density to average power density in the horizontal plane at core elevation Z.

3/4.2.1 AXIAL FLUX DIFFERENCE

The limits on AXIAL FLUX DIFFERENCE assure that the $F_Q(Z)$ upper bound envelope of F_Q^{limit} times the normalized axial peaking factor is not exceeded during either normal operation or in the event of xenon redistribution following power changes.

Provisions for monitoring the AFD on an automatic basis are derived from the plant process computer through the AFD Monitor Alarm. The computer determines the one minute average of each of the OPERABLE excore detector outputs and provides an alarm message immediately if the AFD for at least 2 of 4 or 2 of 3 OPERABLE excore channels are outside the AFD limits and the THERMAL POWER is greater than 50 percent of RATED THERMAL POWER.

POWER DISTRIBUTION LIMITS

BASES

3/4.2.2 and 3/4.2.3 HEAT FLUX HOT CHANNEL FACTOR, and RCS FLOWRATE AND NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR

The limits on Heat Flux Hot Channel Factor, RCS Flowrate, and Nuclear Enthalpy Rise Hot Channel Factor ensure that: (1) the design limits on peak local power density and minimum DNBR are not exceeded, and (2) in the event of a LOCA the peak fuel clad temperature will not exceed the 2200°F ECCS acceptance criteria limit.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 12 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 10 TO FACILITY OPERATING LICENSE NO. DPR-82
PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-275 AND 50-323

INTRODUCTION

By letter dated July 18, 1986, the Pacific Gas and Electric Company (PG&E), licensee for the Diablo Canyon Nuclear Power Plant, Units 1 and 2, requested a License Amendment to change the combined Technical Specifications for Diablo Canyon Units 1 and 2, Section 3/4.2.1, "Axial Flux Difference" for Diablo Canyon Unit 2 (Ref. 1). The changes would implement a Westinghouse developed power distribution control methodology called Relaxed Axial Offset Control (RAOC) for Unit 2 after reaching a burnup of 8000 MWD/MTU in the first cycle. The same change had previously been requested for Diablo Canyon Unit 1 and was issued by the NRC as License Amendment No. 3 to Facility Operating License No. DPR-80 (Ref. 2).

EVALUATION

Westinghouse reactors have for a number of years operated under a power distribution control system called Constant Axial Offset Control (CAOC), which ensures peaking factors will remain below values assumed as input for accident analyses during normal operation of the power plant. Basically, CAOC achieves its result by requiring plant operation within a $\pm 5\%$ flux difference (ΔI) around a measured target value. By controlling the axial power distribution, the possible skewing of the axial xenon distribution is limited, thus minimizing xenon oscillations and their effects on the power distribution.

Plants have varying degrees of margin to the peaking factor limits which can be supported by CAOC. Westinghouse developed the RAOC methodology to directly determine the allowed band of ΔI operation required to support any plant specific peaking factor limit. The NRC staff approved RAOC for referencing in licensing actions in a letter to E. P. Rahe (Westinghouse) from C. Thomas (NRC), dated February 28, 1983 (Ref. 3).

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PDR ADOCK 05000275
P PDR

The staff has reviewed the Technical Specification changes proposed by the licensee for Diablo Canyon Unit 2 and finds they correctly implement RAOC. The staff has previously approved identical implementation of RAOC for Diablo Canyon Unit 1 in Amendment 3 to Facility Operating License DPR-80 (Ref. 2). The staff, therefore, finds the proposed Technical Specification changes acceptable for Unit 2. The analysis described by the licensee applying RAOC to Diablo Canyon Unit 2 is applicable only after the unit reaches 8000 MWD/MTU burnup in Cycle 1 and thereafter until the end of Cycle 1. Cycle specific evaluations will be made by Westinghouse to determine if the allowable ΔI band curve will remain valid or require revision by further Technical Specification change.

In addition to implementation of RAOC for Unit 2, the proposed amendment also changes some of the existing Technical Specifications pages for Unit 1. These are needed to implement the Unit 2 changes and are, therefore, administrative and acceptable.

The licensee's submittal states that the implementation of RAOC is conditional upon NRC approval of a Unit 2 ECCS reanalysis using the revised Westinghouse 1981 ECCS Evaluation Model with BART, as well as reaching 8000 MWD/MTU burnup. The above approval is for RAOC only and does not address the ECCS evaluation.

The staff has completed its evaluation of the ECCS analysis with the BART Evaluation Model and found it acceptable as stated in a letter from S. Varga (NRC) to J. D. Shiffer (PG&E) (Ref. 4).

ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of the facilities components located within the restricted areas as defined in 10 CFR 20. The staff has determined that these amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

CONCLUSION

We have concluded, based on the considerations discussed above, that:
(1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and
(2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

PRINCIPAL CONTRIBUTOR:

M. Dunenfeld
January 30, 1987

References:

1. Letter from J. R. Herrera (PG&E) to H. R. Denton (NRC), dated July 18, 1986 (DCL-86-203), "License Amendment Request 86-08, Technical Specification 3/4.2.1, Unit 2 Relaxed Axial Offset Control."
2. Letter from S. A. Varga (NRC) to J. D. Shiffer (PG&E), "Diablo Canyon Nuclear Power Plant - Issuance of Amendment No. 3 to Facility Operating License No. DPR-80 (Unit 1) and Amendment No. 1 to Facility Operating License No. DPR-82 (Unit 2)," dated November 29, 1985.
3. Letter from C. Thomas (NRC) to E. P. Rahe (Westinghouse), "Acceptance for Referencing of Licensing Topical Report WCAP-1020F(P) (NS-EPR-2649)," dated February 28, 1983.
4. Letter from S. A. Varga (NRC) to J. D. Shiffer (PG&E), "Lifting of Exemption from Requirement of 10 CFR 50, Section 50.46," dated January 22, 1987.