February 24, 1994

Docket Nos. 50-275
and 50-323

Mr. Gregory M. Rueger
Nuclear Power Generation, B14A
Pacific Gas and Electric Company
77 Beale Street, Room 1451
P.O. Box 770000
San Francisco, California 94177

Dear Mr. Rueger:

SUBJECT: ISSUANCE OF AMENDMENTS FOR DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. M85260) AND UNIT NO. 2 (TAC NO. M85261)

The Commission has issued the enclosed Amendment No. 88 to Facility Operating License No. DPR-80 and Amendment No. 87 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 (TS) in response to your application dated December 22, 1992.

These amendments revise TS 2.2 "Reactor Trip System Instrumentation Setpoints," to change the Overtemperature Delta-T reactor trip setpoint as a result of a non-conservatism in the Westinghouse methodology used to calculate the f(delta I) penalty function. The setpoint changes have been included in the setpoint study performed to support implementation of the Process Protection System Upgrade (Eagle 21).

A copy of the related Safety Evaluation is enclosed. A notice of issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,
Original signed by:
Sheri R. Peterson, Project Manager
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 88 to DPR-80
2. Amendment No. 87 to DPR-82
3. Safety Evaluation

cc w/enclosures:
See next page

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Docket File	NRC & Local PDRs
EAdensam	DFoster-Curseen
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NAME	DFoster-Curseen	SPeterson:		TQuay
DATE	2/10/94	2/10/94	2/17/94	2/24/94

OFFICIAL RECORD COPY DOCUMENT NAME: DC85260.AMD

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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Sincerely,

Sheri R Peterson

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Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

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cc w/enclosures:
See next page

Mr. Gregory M. Rueger
Pacific Gas and Electric Company

Diablo Canyon

cc:
NRC Resident Inspector
Diablo Canyon Nuclear Power Plant
c/o U.S. Nuclear Regulatory Commission
P. O. Box 369
Avila Beach, California 93424

Dr. Richard Ferguson, Energy Chair
Sierra Club California
6715 Rocky Canyon
Creston, California 93432

Ms. Nancy Culver
San Luis Obispo
Mothers for Peace
P. O. Box 164
Pismo Beach, California 93448

Ms. Jacquelyn C. Wheeler
3303 Barranca Court
San Luis Obispo, California 93401

Managing Editor
The County Telegram Tribune
1321 Johnson Avenue
P. O. Box 112
San Luis Obispo, California 93406

Chairman
San Luis Obispo County Board of
Supervisors
Room 370
County Government Center
San Luis Obispo, California 93408

Mr. Truman Burns
Mr. Robert Kinosian
California Public Utilities Commission
505 Van Ness, Rm. 4102
San Francisco, California 94102

Diablo Canyon Independent Safety Committee
ATTN: Robert R. Wellington, Esq.
Legal Counsel
857 Cass Street, Suite D
Monterey, California 93940

Mr. Steve Hsu
Radiologic Health Branch
State Department of Health Services
Post Office Box 942732
Sacramento, California 94234

Regional Administrator, Region V
U.S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Mr. Peter H. Kaufman
Deputy Attorney General
State of California
110 West A Street, Suite 700
San Diego, California 92101

Christopher J. Warner, Esq.
Pacific Gas & Electric Company
Post Office Box 7442
San Francisco, California 94120

Mr. John Townsend
Vice President and Plant Manager
Diablo Canyon Power Plant
P. O. Box 56
Avila Beach, California 93424

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-275

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 88
License No. DPR-80

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Pacific Gas & Electric Company (the licensee) dated December 22, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, 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 changes to the Technical Specifications 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:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 88 , are hereby incorporated in the license. Pacific Gas & Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective after RTD bypass elimination and after Eagle 21 installation during the sixth refueling outage currently scheduled to begin March 1994, for Unit 1.

FOR THE NUCLEAR REGULATORY COMMISSION

Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 24, 1994

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 87
License No. DPR-82

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Pacific Gas & Electric Company (the licensee) dated December 22, 1994, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, 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 changes to the Technical Specifications 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 and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 87 , are hereby incorporated in the license. Pacific Gas & Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective after RTD bypass elimination and after Eagle 21 installation during the sixth refueling outage currently scheduled to begin September 1994, for Unit 2.

FOR THE NUCLEAR REGULATORY COMMISSION

Theodore R. Quay

Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 24, 1994

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 88 TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 87 TO FACILITY OPERATING LICENSE NO. DPR-82

DOCKET NOS. 50-275 AND 50-323

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages are also included, as appropriate.

REMOVE*	INSERT
2-8	2-8

* The page should not be removed until both units have completed the subject modification. TS page 2-8 provided in this amendment should be used in lieu of the same page provided in Amendment Nos. 84 and 83 dated October 7, 1993.

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

TABLE NOTATIONS

NOTE 1: OVERTEMPERATURE ΔT

$$\Delta T \left(\frac{1 + \tau_4 S}{1 + \tau_5 S}\right) \leq \Delta T_o \left\{ K_1 - K_2 \left(\frac{1 + \tau_1 S}{1 + \tau_2 S}\right) [T - T'] + K_3 (P - P') - f_1(\Delta I) \right\}$$

Where: $\frac{1 + \tau_4 S}{1 + \tau_5 S}$ = Lead-lag compensator on measured ΔT

τ_4, τ_5 = Time constants utilized in the lead-lag controller for ΔT, $\tau_4 = 0$ seconds, $\tau_5 = 0$ seconds

ΔT_o = Indicated ΔT at RATED THERMAL POWER

K_1 = 1.2

K_2 = 0.0182/°F

$\frac{1 + \tau_1 S}{1 + \tau_2 S}$ = The function generated by the lead-lag controller for T_{avg} dynamic compensation

τ_1, τ_2 = Time constants utilized in the lead-lag controller for T_{avg}, $\tau_1 = 30$ seconds, $\tau_2 = 4$ seconds

T = Average temperature, °F

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

TABLE NOTATIONS

NOTE 1: (continued)

T' = Nominal T_{avg} at RATED THERMAL POWER

K_3 = 0.000831/psig

P = Pressurizer pressure, psig

P' = 2235 psig (Nominal RCS operating pressure)

S = Laplace transform operator, s^{-1}

and $f_1(\Delta I)$ is a function of the indicated difference between top and between detectors of the power range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(i) for $q_t - q_b$ between -19% and +7%, $f_1(\Delta I) = 0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

(ii) for each percent that the magnitude of $(q_t - q_b)$ exceeds -19%, the ΔT Trip Setpoint shall be automatically reduced by 2.75% of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of $(q_t - q_b)$ exceeds +7%, the ΔT Trip Setpoint shall be automatically reduced by 2.38% of its value at RATED THERMAL POWER.

NOTE 2: The channel's maximum Trip Setpoint shall not exceed its computed Trip Setpoint by more than 1.0% ΔT span.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 88 TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 87 TO FACILITY OPERATING LICENSE NO. DPR-82

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter of December 22, 1992, Pacific Gas and Electric Company (or the licensee) submitted a request for changes to the Technical Specifications (TS) for Diablo Canyon Power Plant (DCPP) Units 1 and 2. The proposed amendments would revise the Overtemperature Delta-T (OTDT) reactor trip setpoint (TS 2.2) as a result of a non-conservatism in the Westinghouse methodology used to calculate the f(ΔI) penalty function for the OTDT reactor trip setpoint.

The proposed changes to TS 2.2.1 would change Note 1 to Table 2.2-1 to replace the f(ΔI penalty slope of 1.76% with 2.38% and the ΔI deadband of -19% to +9% with -19% to +7%.

The setpoint changes in this license amendment request have been included in the setpoint study performed to support implementation of the Process Protection System Upgrade (Eagle 21). The Eagle 21 upgrade is to be implemented during the sixth refueling outages and placed in service during Cycle 7 for each unit.

A telecon was held with the licensee for additional clarification on January 5, 1994.

2.0 BACKGROUND

The design departure from nucleate boiling (DNBR) limit is set for protection against the DNB that could cause fuel damage. The OTDT reactor trip setpoint protects against fuel damage caused by DNB during normal operation, operational transients, or transient conditions arising from faults of moderate frequency.

The OTDT reactor trip provides core protection to prevent DNB for all combinations of pressure, power, coolant temperature, and axial power distribution, provided that the transient is slow with respect to piping transient delays from the core to temperature detectors (about 4 seconds).

The OTDT setpoint is a continuously calculated variable setpoint. Three plant parameters, RCS pressure, T_{avg}, and axial neutron flux distribution, are continuously monitored, and, as changes are detected, the reactor protection system automatically modifies the OTDT reactor trip setpoint.

The axial neutron flux distribution modifier (called the f(ΔI) penalty function) is designed to provide protection against DNB for adverse power shapes that may occur during transient condition. The f(ΔI) penalty function is calculated using the Core Thermal Limits and Axial Offset (AO) Limits.

The TS changes are proposed because Westinghouse notified PG&E that there was non-conservatism in the methodology used to calculate the penalty function, f(ΔI). The positive "wing" of the f(ΔI) function may not provide a sufficiently large penalty for axial power shapes that have a large positive ΔI.

3.0 EVALUATION

In TS Table 2.2-1 (Reactor Trip System Instrumentation Trip Setpoints), Note 1 (Overtemperature ΔT), for the current TS ΔI deadband (-19% to +9%), the f(ΔI) penalty function is zero, such that no reduction in the OTDT setpoint is necessary. Steady state operation within this deadband is desirable, as it is a good indication of a stable core. When not in the deadband, the f(ΔI) increases and is subtracted from the calculated OTDT setpoint. Currently, for each percent that ΔI exceeds +9%, the OTDT setpoint is automatically reduced by 1.76%, and for each percent that ΔI becomes more negative than -19%, the OTDT setpoint is automatically reduced by 2.75% (TS Table 2.2-1).

For Unit 1, Cycle 5, Westinghouse determined that there was sufficient DNB margin (difference between the required DNBR design limit and the DNBR limit actually used in the DNB-limiting accident analysis) to accommodate the non-conservative f(ΔI) slope.

However, for Unit 2, Cycle 5 standard (LOPAR) fuel, it was determined that insufficient DNB margin existed, therefore, Westinghouse calculated a new, more restrictive $F^N_{\Delta H}$ limit of 1.5 to apply.

For Cycle 6, Units 1 and 2, which uses Vantage 5 fuel, Westinghouse determined that sufficient DNB margin exists using the current f(ΔI) penalty.

For Cycle 7 (with Eagle 21), Units 1 and 2, with Vantage fuel, PG&E proposes to revise the f(ΔI) penalty function per changes proposed in this license amendment request (LAR) to remove the non-conservatism. The methodology used in the general calculation of setpoints and ΔI function is included in the approved Westinghouse report WCAP-8745-P-A used by the licensee. These changes to TS 2.2.1 would change Note 1 to Table 2.2-1 to replace the f(ΔI) penalty slope of 1.76% with 2.38% and the ΔI deadband of -19% to +9% with -19% to +7% (a more restrictive positive "wing").

The following is a summary of the action taken by PG&E for both Units to address the Westinghouse non-Conservatism.

	Unit 1	Unit 2
Cycle 5:	sufficient DNB margin available	limit $F^N_{\Delta H}$ to 1.50 for LOPAR fuel
Cycle 6:	sufficient DNB margin available	sufficient DNB margin available
Cycle 7: (with Eagle 21)	revise f(ΔI) penalty function per changes proposed in this LAR	revise f(ΔI) penalty function per changes proposed in this LAR

A similar license amendment to change the f(ΔI) penalty function to correct the Westinghouse non-conservatism was issued for Catawba Unit 2. These changes are based on the use of corrected methodology by Westinghouse. In addition, the Diablo Canyon LAR for Cycle 7 assumes implementation of the Process Protection System Upgrade (Eagle 21) which is to be installed during the Unit 1 and Unit 2 sixth refueling outages.

The staff finds these changes to be acceptable as the approved corrected methodology was used in the analysis and the previous non-conservatism was removed.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations,the California State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the 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 the amendments involve no significant hazards considera-tion, and there has been no public comment on such finding (58 FR 7003). Accordingly, the 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 the amendments.

6.0 CONCLUSION

The Commission has 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, (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.

Principal Contributor: H. Balukjian

Date: February 24, 1994