May 13, 1986

Docket Nos. 50-275
and 50-323

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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
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Dear Mr. Shiffer:

The Commission has issued the enclosed Amendment No. 7 to Facility Operating License No. DPR-80 and Amendment No. 5 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 February 14, 1986.

These amendments revise the Technical Specification 5.3.1, "Fuel Assemblies" to increase the reload fuel maximum enrichment from 3.5 to 4.5 weight percent U-235.

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,

/s/HSchierling

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

Enclosures:
1. Amendment No. 7 to DPR-80
2. Amendment No. 5 to DPR-82
3. Safety Evaluation

cc: w/enclosures
See next page

No legal objection with changes to SE attached.

OFC	:PAD#3	:PAD#3	:PAD-3	:OELD	:D/PAD-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. 7
License No. DPR-80

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

   A. The application for amendment dated February 14, 1986, (LAR 86-02) 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:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 7 , 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

Joseph D. Neighbors

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 13, 1986

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. 5
License No. DPR-82

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

   A. The application for amendment dated February 14, 1986, (LAR 86-02) 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. 5 , 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

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 13, 1986

ATTACHMENT TO LICENSE AMENDMENT NOS. 7 AND 5

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 indiciating the area of change.

Remove Page	Insert Page
5.5	5.5

DESIGN PRESSURE AND TEMPERATURE

5.2.2 Containment is designed and shall be maintained for a maximum internal pressure of 47 psig and a temperature of 271°F, coincident with a Double Design Earthquake.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The core shall contain 193 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 144 inches and contain a maximum total weight of 1766 grams uranium. The initial core loading shall have a maximum enrichment of 3.15 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.5 weight percent U-235.

CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 53 full length and no part length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80% silver, 15% indium, and 5% cadmium. All control rods shall be clad with stainless steel tubing.

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

a. In accordance with the Code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

VOLUME

5.4.2 The total water and steam volume of the Reactor Coolant System is 12,811 ± 100 cubic feet at a nominal T_{avg} of 576°F for Unit 1 and 12,903 ± 100 cubic feet at a nominal T_{avg} of 577°F for Unit 2.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 7 TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 5 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 February 14, 1986, Pacific Gas and Electric Company (the licensee) made application to revise Technical Specification 5.3.1 "Fuel Assemblies", of the Diablo Canyon Power Plant, Units 1 and 2, to increase the reload maximum fuel enrichment from 3.5 to 4.5 weight percent U-235. To support this application the licensee submitted Report 55-161," Criticality Safety Analysis of the New Fuel Storage Vault in the Diablo Canyon Power Plant with Fuel of 4.5% Enrichment".

DISCUSSION AND EVALUATION

The fresh fuel storage vault at Diablo Canyon consists of 70 storage locations. Each location consists of four 2"x2"x1/4" stainless steel "L" channels which support the assembly. These locations are arranged in two 5x7 arrays with a center to center spacing of 22 inches between assemblies. Assemblies are stored dry in the vault with the concrete walls of the vault at least 24 inches from the center of the nearest assembly.

Calculations of the k-effective value of the racks were performed for full density water moderation and as a function of water density down to five percent of full density. For the full density case an infinite array was assumed. At the low density values the actual vault geometry was used in order to account for leakage effects. Calculations were performed with the AMPX-KENO code package using the 123 group cross-section set with the NITAWL treatment of the U-238 resonance absorption. This code package has been extensively verified by Southern Science (the performers of the analysis) and is the most widely used tool for fuel pool criticality calculations. Its use is acceptable for this application.

The nominal values of the k-effective for the racks are 0.921 for the full density case and 0.866 for the low density (7.5-8 percent full density) case. The calculational bias is nil for the full density case and 0.002 for the low density case. Uncertainties in the bias, statistical uncertainties in the Monte-Carlo calculation, mechanical tolerances, and fuel enrichment and density tolerances were combined to obtain the total uncertainty. The result was 0.013 for the full density case and 0.012 for the low density case when the uncertainties were computed at the 95% probability, 95% confidence level. Combining the nominal value, calculational bias and uncertainties yields a final k-effective value of 0.934 for the full density case and 0.880 for the low density moderation case. These values meet our criteria of 0.95 for the full density case and 0.98 for the low density case and are acceptable.

For other accident configurations (e.g., dropping an assembly between storage locations) assumption of the presence of water is not required and the k-effective values are very low (less than 0.7).

In summary we conclude that the analysis of the k-effective value of the fresh fuel racks is acceptable, and that fresh fuel having an enrichment less than or equal to 4.5 weight percent U-235 may be safely stored in the racks. This conclusion is based on the following:

1. Approved calculational methods and techniques which have been verified by comparison with experiment were used.

2. Calculational and mechanical uncertainties have been evaluated and are included in the final result.

3. The effect of accidents has been considered, and

4. The results meet the staff's acceptance criteria for k-effective in fresh fuel racks.

The proposed change in Technical Specification 5.3.1 is acceptable for storage of 4.5 weight percent U-235 assemblies in the fresh fuel storage vault. Storage of this fuel in the spent fuel pool is the subject of a separate license amendment.

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.

Dated: May 13, 1986

PRINCIPAL CONTRIBUTOR:

W. Brooks, Reactor Systems Branch, PWR-A