

March 31, 2004

Mr. Gregory M. Rueger
Senior Vice President, Generation and
Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P. O. Box 3
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NO. 1 (TAC NO. MB9640) AND UNIT
NO. 2 (TAC NO. MB9641) - ISSUANCE OF AMENDMENT RE: USE OF A
POWER DISTRIBUTION MONITORING SYSTEM

Dear Mr. Rueger:

The Commission has issued the enclosed Amendment No. 164 to Facility Operating License No. DPR-80 and Amendment No. 166 to Facility Operating License No. DPR-82 for the Diablo Canyon Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated June 11, 2003.

The amendments revise the TS to allow use of the power distribution monitoring system for power distribution measurements as described in Topical Report WCAP-12462-P-A, "BEACON: Core Monitoring and Support System."

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

Sincerely,

/RA/

Girija S. Shukla, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-275
and 50-323

Enclosures: 1. Amendment No. 164 to DPR-80
2. Amendment No. 166 to DPR-82
3. Safety Evaluation

cc w/encls: See next page

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TS: ML040920158 NRR-100 PKG: ML040920251

ACCESSION NO.: ML040920245

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| OFFICE | PDIV-2/PM | PDIV-2/LA | IROB/SC | OGC | PDIV-2/SC |
| NAME | GShukla | EPeyton | TBoyce | RHoefling | SDembek |
| DATE | 3/15/04 | 3/15/04 | 3/3/04 | 3/23/04 | 3/24/04 |

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OFFICIAL RECORD COPY

Diablo Canyon Power Plant, Units 1 and 2

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PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-275

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.164
License No. DPR-80

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Pacific Gas and Electric Company (the licensee) dated June 11, 2003, 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. 164, are hereby incorporated in the license. Pacific Gas and 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 as of its date of issuance and shall be implemented within 180 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/
Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 31, 2004

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 166
License No. DPR-82

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Pacific Gas and Electric Company (the licensee) dated June 11, 2003, 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. 166, are hereby incorporated in the license. Pacific Gas and 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 as of its date of issuance and shall be implemented within 180 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 31, 2004

ATTACHMENT TO LICENSE AMENDMENT NO.164

TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO.166 TO FACILITY OPERATING LICENSE NO. DPR-82

DOCKET NOS. 50-275 AND 50-323

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.1-13
3.1-14
3.2-3
3.2-11
3.3-8
3.3-9

INSERT

3.1-13
3.1-14
3.2-3
3.2-11
3.3-8
3.3-9

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 164 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. DPR-82
PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON POWER PLANT, UNITS 1 AND 2
DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By application dated June 11, 2003, Pacific Gas and Electric Company (PG&E or the licensee) requested changes to the Technical Specifications (TS) (Appendix A to Facility Operating License Nos. DPR-80 and DPR-82) for the Diablo Canyon Power Plant (DCPP), Units 1 and 2.

The proposed amendments would revise the TS to allow use of the power distribution monitoring system (PDMS) for power distribution measurements as described in Topical Report (TR) WCAP-12462-P-A, "BEACON: Core Monitoring and Support System."

The Best Estimate Analyzer for Core Operation Nuclear (BEACON) system was developed by Westinghouse to improve the monitoring support for Westinghouse-designed pressurized water reactors (PWRs). It is a core monitoring and support package which uses Westinghouse standard instrumentation in conjunction with an analytical methodology for on-line generation of three-dimensional power distributions. The system provides core monitoring, core measurement reduction, core analysis, and core predictions. WCAP-12472-P-A was approved by the NRC staff on February 16, 1994.

The following proposed TS changes involved in adopting the BEACON system are described in the licensee's application. The proposed TS changes and justifications are consistent with WCAP-12472-P.

1. TS 3.1.7, "Rod Position Indication": The requirements to verify rod positions indirectly by use of the "moveable incore detectors" will be revised to require verification of rod positions indirectly by use of "core power distribution measurement information." This will allow use of either the PDMS or the moveable incore detectors for verifying rod position.
2. TS 3.2.1, "Heat Flux Hot Channel Factor": Surveillance Requirement (SR) 3.2.1.3 currently requires verification of peaking factor $F_o^w(Z)$ by use of "flux maps." The SR will be revised to require verification by "power distribution measurements." This will

allow use of either the PDMS or the moveable incore detectors for verifying peaking factor $F_Q^w(Z)$.

3. TS 3.2.4, "Quadrant Power Tilt Ratio (QPTR)": SR 3.2.4.2 currently requires verification of QPTR by use of the "moveable incore detectors." The SR will be revised to require verification of QPTR by use of "core power distribution measurement information." This will allow use of either the PDMS or the moveable incore detectors for verifying QPTR.
4. TS 3.3.1, "Reactor Trip System (RTS) Instrumentation": SR 3.3.1.3 and SR 3.3.1.6 currently require "incore distribution measurements." The SRs will be revised to require "incore power distribution measurements." This will allow use of either the PDMS or the moveable incore detectors for performance of the surveillances.

In addition, a section is added to TS 5.6.5, "Administrative Controls," Core Operating Limits Report (COLR) section, to include the NRC-approved methodologies used to define the equations and constants used to determine the applicable measurement uncertainties applied to the core peaking factors when determined by either the PDMS or the flux mapping system. The constants may be revised periodically as appropriate to reflect cycle-specific variables.

2.0 REGULATORY EVALUATION

The staff finds that the licensee in Section 5.0 of its submittal identified the applicable regulatory requirements. The regulatory requirements for which the staff based its acceptance are given below.

Section 182a of the Atomic Energy Act requires that applicants for nuclear power plant operating licenses include TS as part of the operating license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. Pursuant to 10 CFR 50.36, TS are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. However, the rule does not specify the particular requirements to be included in a plant's TS. Under 10 CFR 50.36(c)(2)(ii), a limiting condition for operation must be included in TS for any item meeting one of the following four criteria:

- Criterion 1:* Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
- Criterion 2:* A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
- Criterion 3:* A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design

basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Criterion 4: A structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

Those items that do not fall within or satisfy any of the above criteria do not need to be included in Section 3 of the TS. The PDMS instrumentation does not meet any of the criteria of 10 CFR 50.36(c)(2)(ii) for inclusion in the TS. Therefore, the licensee will include the PDMS instrumentation requirements in an equipment control guideline (ECG). The ECGs are plant-specific administrative controls, similar to TS controls, but which are controlled by the licensee in accordance with 10 CFR 50.59.

3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's technical and regulatory analyses in support of its proposed license amendments which are described in Sections 4.0 and 5.0 of the licensee's submittal. The detailed evaluation below will support the conclusion 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

PG&E will use the BEACON system to augment the functional capability of the flux mapping system for the purpose of power distribution surveillances. WCAP-12472-P-A discusses an application of BEACON in which the TS and core power distribution limits are changed to take credit for continuous monitoring by plant operators. PG&E will use a conservative application of BEACON where the core power distribution limits remain unchanged; referred to as the BEACON TS monitor (TSM). PG&E will use the BEACON PDMS as the primary method for power distribution measurements and the flux mapping system, if required, when thermal power is greater than 25 percent rated thermal power (RTP). At thermal power levels less than or equal to 25 percent RTP, or when PDMS is inoperable, the moveable incore detector system will be used.

The PDMS instrumentation provides the capability to monitor core parameters at more frequent intervals than is currently required by TS. The PDMS combines inputs from currently installed plant instrumentation and design data for each fuel cycle, and does not modify or eliminate existing plant instrumentation. It provides a means to continuously monitor the power distribution limits including limiting peaking factors and quadrant power tilt ratio. The PDMS instrumentation does not change any of the key safety parameter limits or levels of margin as considered in the reference design basis evaluations. These limits are not revised by this license amendment, and can be determined independently of the operability of the PDMS. The PDMS itself does not meet any of the 10 CFR 50.36(c)(2)(ii) selection criteria for inclusion into the TS. Therefore, the PDMS does not need a TS requiring its operability.

The proposed Diablo Canyon TS changes to: TS 3.1.7, "Rod Position Indication"; TS 3.2.1, "Heat Flux Hot Channel Factor"; TS 3.2.4, "Quadrant Power Tilt Ratio (QPTR)"; TS 3.3.1,

"Reactor Trip System (RTS) Instrumentation"; and TS 5.6.5, "Core Operating Limits Report" are consistent with the technical requirements of WCAP-12472-P-A and 10 CFR 50.36. TS Bases changes will be implemented in accordance with TS 5.5.14, "TS Bases Control Program." The staff has reviewed the licensee's proposed TS changes for adopting the TS changes to allow use of a BEACON system as a TSM and finds the proposals acceptable.

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

The 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 and change surveillance requirements. 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 consideration and there has been no public comment on such finding (68 FR 40717). 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. R. Tjader

Date: March 31, 2004.