

November 21, 2006

Mr. John S. Keenan
Senior Vice President and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 770000
San Francisco, CA 94177-0001

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NO. 1 - ISSUANCE OF
AMENDMENT RE: TECHNICAL SPECIFICATION 5.6.5, "CORE OPERATING
LIMITS REPORT (COLR)" (TAC NO. MC9299)

Dear Mr. Keenan:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 191 to Facility Operating License No. DPR-80 for the Diablo Canyon Power Plant, Unit No. 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated December 16, 2005, as supplemented by letter dated September 27, 2006.

The amendment revises TS 5.6.5, "Core Operating Limits Report (COLR)," by adding Westinghouse Topical Report WCAP-12945-P-A, Addendum 1, Revision 0, "Method for Satisfying 10 CFR 50.46 Reanalysis Requirements for Best Estimate LOCA [Loss-of-Coolant Accident] Evaluation Models," dated December 2004, as an approved analytical method for determining the core operating limits for Diablo Canyon Power Plant, Unit No. 1.

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 by M. Fields for/

Alan Wang, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-275

Enclosures: 1. Amendment No. 191 to DPR-80
2. Safety Evaluation

cc w/encls: See next page

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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. 191
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 December 16, 2005, supplemented by a letter dated September 27, 2006, 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.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

David Terao, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility
Operating License and
Technical Specifications

Date of Issuance: November 21, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 191

TO FACILITY OPERATING LICENSE NO. DPR-80

DOCKET NO. 50-275

Replace page 3 of the Facility Operating License No. DPR-80 with the attached revised page 3.

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by an amendment number and contains a marginal line indicating the area of change.

REMOVE

5.0-27

INSERT

5.0-27

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 191 TO

FACILITY OPERATING LICENSE NO. DPR-80

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON POWER PLANT, UNIT NO. 1

DOCKET NO. 50-275

1.0 INTRODUCTION

By application dated December 16, 2005 (Reference 1), supplemented by a letter dated September 27, 2006 (Reference 2) (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML053630050 and ML062780193, respectively), Pacific Gas and Electric Company (PG&E or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. DPR-80) for the Diablo Canyon Power Plant (DCPP), Unit No. 1.

The proposed amendment would revise Technical Specification (TS) 5.6.5, "Core Operating Limits Report (COLR)." Specifically, the proposed change would add Westinghouse Topical Report (TR) WCAP-12945-P-A, Addendum 1, Revision 0, "Method for Satisfying 10 CFR 50.46 Reanalysis Requirements for Best Estimate LOCA [Loss-of-Coolant Accident] Evaluation Models," dated December 2004, to the list of approved analytical methods in TS 5.6.5.b for determining core operating limits for DCPP, Unit No. 1.

The supplemental letter, dated September 27, 2006, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 14, 2006 (71 FR 7810).

2.0 REGULATORY EVALUATION

Paragraph 50.36(c)(2)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires in part that TS limiting conditions for operation (LCOs) be established for 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. As such, license amendments are generally required for each fuel cycle to update the values of cycle-specific parameter limits in the TSs. To eliminate the need for a license amendment to update the cycle-specific parameter limits for each fuel cycle while meeting 10 CFR 50.36(c)(2)(ii) requirements, the Nuclear Regulatory Commission (NRC) has

allowed licensees to implement an alternative method, whereby the licensee incorporates the cycle-specific parameter limits in a COLR, which is a licensee-controlled document. Generic Letter (GL) 88-16 provides the COLR-implementation guidance that includes the requirement to list in the TSs the NRC-approved analytical methods used to determine the core operating limits. The analytical methods referenced in TSs identify the topical reports by number, title, and date, or identify the staff's safety evaluation report for a plant-specific methodology by NRC letter and date.

The NRC staff used the guidance in GL 88-16 for the review of the license amendment request (LAR) for the addition of TR WCAP-12945-P-A, Addendum 1, Revision 0, to TS 5.6.5.b.

3.0 TECHNICAL EVALUATION

Paragraph 50.46(a)(1)(i) of 10 CFR requires, in part, that the cooling performance of the emergency core cooling system (ECCS) of a nuclear power plant must be calculated in accordance with an acceptable evaluation model. Westinghouse TR WCAP-12945-P-A, "Westinghouse Code Qualification Document for Best-Estimate Loss of Coolant Accident Analysis," June 1996, is an NRC-approved best-estimate (BE) large-break loss-of-coolant accident (LBLOCA) analysis methodology for Westinghouse-designed 3- and 4-loop plants with cold-leg ECCS injection. The licensee uses this BE methodology for the LBLOCA analyses of DCPP, Unit Nos. 1 and 2, to demonstrate cooling performance of its ECCS, as well as certain LCOs such as power peaking factor and axial power distribution that are specified in the DCPP, Unit No. 1 COLR. TR WCAP-12945-P-A is included in DCPP, Unit No. 1 TS. 5.6.5.b. The proposed change is to add TR WCAP-12945-P-A, Addendum 1, Revision 0, to TS 5.6.5.b.

Paragraph 50.46(a)(3)(ii) of 10 CFR provides, in part, that when the licensee makes a significant change to its acceptable evaluation model, or finds errors in the evaluation model, the licensee is required to report to the NRC within 30 days. This report shall include a proposed schedule for providing a reanalysis of the plant's LOCA response or taking other action as may be needed to show compliance with 50.46 requirements. The reanalysis is usually done by repeating the plant's LOCA analyses using a LOCA methodology approved for the plant, with changes and errors updated if the base LOCA methodology remains the same. Using LOCA methodologies covered by 10 CFR Part 50, Appendix K, this reanalysis entails performing one LOCA calculation for each case analyzed. Using the BE LOCA methodologies described in WCAP-12945-P-A, several LOCA calculations are required. Addendum 1 to WCAP-12945-P-A describes an abbreviated reanalysis methodology that would preserve the characteristic plant-specific LBLOCA transient, while implementing changes or correcting errors in accordance with 10 CFR 50.46(a)(3)(ii). The abbreviated reanalysis methodology involves a recalculation of the reference transient and the superposition correction factor, and a re-sampling of the superposition correction uncertainty. This would significantly reduce the number of LOCA calculations needed to perform the reanalysis and, therefore, reduce the regulatory burden related to these reanalyses, while still assuring plant safety. The NRC staff has previously reviewed and approved Addendum 1 to WCAP-12945-P-A for referencing as an approved methodology (Reference 3).

The licensee's LAR would change the DCPP TS 5.6.5, "Core Operating Limits Report (COLR)," by adding item 7, "WCAP-12945-P-A, Addendum 1, Revision 0, 'Method for Satisfying 10 CFR 50.46 Reanalysis Requirements for Best Estimate LOCA Evaluation Models,' December 2004.

(Westinghouse Proprietary) (Unit No. 1 Only).” (The licensee stated in its application that it is also performing a plant-specific BE LOCA analysis for DCP, Unit No. 2, using a methodology different than the methodology presented in Addendum 1 to WCAP-12945-P-A and, therefore, this license amendment applies only to DCP, Unit No. 1.) This LAR is acceptable provided that the licensee satisfies the conditions or limitations of the referenced Addendum 1 to WCAP-12945-P-A for its application.

Specifically, the NRC approval of Addendum 1 to WCAP-12945-P-A included the following limitations:

- A. Addendum 1 to WCAP-12945 may only be applied to plants whose approved LBLOCA analyses were performed using methodologies described in either WCAP-12945-P-A or WCAP-14449-P-A.
- B. Licensees must include in individual plant requests a statement that the licensee and its fuel vendor have ongoing processes which assure that the ranges and values of input parameters for the plant LOCA analysis bound the ranges and values of the as-operated plant values for those parameters.
- C. In its initial license applications from the various plants to which it may apply, licensees must submit plant-specific LARs to adopt this methodology, including TS changes, COLR changes, and initial LBLOCA reanalysis results.

The LBLOCA analyses for both DCP units have been performed using the methodology described in WCAP-12945-P-A that is referenced in the DCP TS 5.6.5; therefore, limitation A is satisfied. With regard to limitation B, the licensee described its ongoing processes and interactions between its Transient Analysis Group and fuel vendor that assure that the ranges and values of the input parameters used in the LBLOCA analyses bound the as-operated plant ranges and values for these parameters. In its supplemental letter of September 27, 2006, the licensee also stated that PG&E and its LBLOCA analyses vendor (Westinghouse) have ongoing processes in place that assure that the ranges and values of input of parameters for DCP, Unit No. 1, LBLOCA analyses conservatively bound the ranges and values of those parameters for the as-operated DCP, Unit No. 1. Regarding limitation C, the licensee, in its December 16, 2005, LAR, provided TS changes, COLR changes, and the initial LBLOCA reanalysis results. The initial LBLOCA reanalysis results were provided in “Pending Analysis of Record, DCP Unit 1 Peak Cladding Temperature Margin Utilization,” that was previously provided to the NRC in its annual report dated July 25, 2005 (Reference 4). The peak cladding temperature (PCT) result was based on the reanalysis of the DCP, Unit No. 1 LBLOCA using the superposition step methodology of Addendum 1 to WCAP-12945-P-A.

In response to an NRC staff request for additional information, the licensee also provided a discussion of the reanalysis of the local cladding oxidation for compliance with other acceptance criteria of 10 CFR 50.46. In particular, the licensee discussed the following acceptance criteria with regards to local cladding oxidation: the maximum cladding oxidation of 17 percent (criterion 2), maximum hydrogen generation of 1 percent (criterion 3), coolable geometry (criterion 4), and long-term cooling (criterion 5). With regard to criteria 2, 3, 4, and 5, since the reanalyzed PCT is less than the PCT of the original analysis, the cladding oxidation and hydrogen generation results of the original analysis remain bounding and continue to

comply with the acceptance limits. Therefore, the licensee satisfies all limitations for the use of Addendum 1 to WCAP-12945-P-A for the DCPD, Unit No. 1.

In addition, the NRC staff finds that the proposed TS change to add the NRC-approved analytical methodology Addendum 1 to WCAP-12945-P-A to TS 5.6.5.b is consistent with the COLR-implementation guidance of GL 88-16. The NRC staff has reviewed PG&E's LAR to add approved analytical methodology Addendum 1 to WCAP-12945-P-A to the DCPD TS 5.6.5.b. Based on the evaluation discussed above, the NRC staff concludes that the proposed TS change is acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes 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 amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (71 FR 7810; published on February 14, 2006). Accordingly, the amendment meets 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 amendment.

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.

7.0 REFERENCES

1. Letter from D. H. Oatley (Pacific Gas and Electric Company) to U.S. Nuclear Regulatory Commission, "Docket No. 50-275, OL-DPR-80, Diablo Canyon Unit 1, License Amendment Request 05-07, Revision to Technical Specification 5.6.5, 'Core Operating Limits Report (COLR),' " December 16, 2005, DCL-05-146.
2. Letter from J. R. Becker (Pacific Gas and Electric Company) to U.S. Nuclear Regulatory Commission, "Docket No. 50-275, OL-DPR-80, Diablo Canyon Unit 1, Response to NRC Request for Information Regarding License Amendment Request 05-07, Revision to

Technical Specification 5.6.5, 'Core Operating Limits Report (COLR),' September 27, 2006, DCL-06-112.

3. Letter from H. N. Berkow (U.S. Nuclear Regulatory Commission) to J. Gresham (Westinghouse Electric Company), "Final Safety Evaluation for Westinghouse Topical Report, 'Addendum 1 to WCAP-12945-P-A and WCAP-14449-P-A, Method for Satisfying 10 CFR 50.46 Reanalysis Requirements for Best-Estimate LOCA Evaluation Models' (TAC No. MB6803)," March 11, 2004.
4. Letter from D. Jacobs (Pacific Gas and Electric Company) to U.S. Nuclear Regulatory Commission, "Docket No. 50-275, OL-DPR-80, Docket No. 50-323, OL-DPR-82, Diablo Canyon Units 1 and 2, 10 CFR 50.46 Annual Report for 2004 of Emergency Core Cooling System Evaluation Model Changes," July 25, 2005, DCL-05-086.

Principal Contributor: Y. Hsii

Date: November 21, 2006