

April 29, 2002

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

SUBJECT: DIABLO CANYON NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 - ISSUANCE
OF AMENDMENT RE: RENEWAL OF STEAM GENERATOR TUBE W*
ALTERNATE REPAIR CRITERIA (TAC NOS. MB2983 AND MB2985)

Dear Mr. Rueger:

The Commission has issued the enclosed Amendment No. 151 to Facility Operating License No. DPR-80 and Amendment No. 151 to Facility Operating License No. DPR-82 for the Diablo Canyon Nuclear Power Plant (DCPP), Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 13, 2001, as supplemented by letter dated March 14, 2002.

The amendments revise TS Section 5.5.9, "Steam Generator Tube Surveillance Program," to allow the extension of the steam generator tube W star (W*) alternate repair criteria (ARC) through Cycles 12 and 13. This extension will allow PG&E additional time to validate the W* leak rate model through performance of additional in-situ pressure testing of W* indications.

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. 151 to DPR-80
2. Amendment No. 151 to DPR-82
3. Safety Evaluation

cc w/encls: See next page

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OFFICE	PDIV-2/PM	PDIV-2/LA	EMCB/SC	OGC NLO	PDIV-2/SC
NAME	GShukla	EPeyton	LLund*	RHoefling*	SDembek*
DATE	4/10/02	4/10/02	4/5/02	4/18/02	4/19/02

OFFICIAL RECORD COPY

Diablo Canyon Power Plant, Units 1 and 2

cc:

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

Dr. Richard Ferguson, Energy Chair
Sierra Club California
1100 11th Street, Suite 311
Sacramento, CA 95814

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

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

Mr. Truman Burns
Mr. Robert Kinoshian
California Public Utilities Commission
505 Van Ness, Room 4102
San Francisco, CA 94102

Mr. Steve Hsu
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732
Sacramento, CA 94327-7320

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

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Harris Tower & Pavilion
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

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

Mr. David H. Oatley, Vice President,
Diablo Canyon Operations
Diablo Canyon Nuclear Power Plant
P.O. Box 3
Avila Beach, CA 93424

Telegram-Tribune
ATTN: Managing Editor
1321 Johnson Avenue
P.O. Box 112
San Luis Obispo, CA 93406

Mr. Ed Bailey, Radiation Program Director
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732 (MS 178)
Sacramento, CA 94327-7320

Mr. Robert A. Laurie, Commissioner
California Energy Commission
1516 Ninth Street (MS 31)
Sacramento, CA 95814

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-275

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151
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 September 13, 2001, as supplemented by letter dated March 14, 2002, 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. 151, 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 30 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: April 29, 2002

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151
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 September 13, 2001, as supplemented by letter dated March 14, 2002, 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.151, 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 30 days from the date of its 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: April 29, 2002

ATTACHMENT TO

LICENSE AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 151 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

5.0-10
5.0-13
5.0-17
5.0-30

INSERT

5.0-10
5.0-13
5.0-17
5.0-30

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 151 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 application dated September 13, 2001, as supplemented by letter dated March 14, 2002, Pacific Gas and Electric Company (PG&E/the licensee) requested changes to the Technical Specifications (TSs) (Appendix A to Facility Operating License Nos. DPR-80 and DPR-82) for the Diablo Canyon Nuclear Power Plant (DCPP), Unit Nos. 1 and 2. The proposed changes would revise TS Section 5.5.9, "Steam Generator Tube Surveillance Program," to allow extension of the steam generator tube W^* alternate repair criteria (ARC) through Cycles 12 and 13. This extension will allow PG&E additional time to validate the W^* leak rate model through performance of additional in-situ pressure testing of W^* indications.

The March 14, 2002, supplemental letter provided additional clarifying information, does not expand the scope of the application as originally noticed, and does not change the original proposed no significant hazards consideration determination published in the *Federal Register* on October 31, 2001 (66 FR 55021).

2.0 BACKGROUND

PG&E requested a revision to TS 5.5.9, "Steam Generator Tube Surveillance Program," for DCPP Unit Nos. 1 and 2, to allow implementation of the steam generator (SG) tube W^* ARC. This amendment was approved on February 19, 1999 (NUDOCS Accession No. 9903030010). The applicability of the amendment was limited to two cycles of operation (Cycles 10 and 11) because of the lack of data validating the W^* leak rate model. The leak rate model was discussed and documented in Westinghouse Topical Report WCAP-14797.

After applying the W^* criteria for the past two cycles of operation, the licensee proposed to extend the application for the following two cycles, Cycles 12 and 13, for Units 1 and 2. The ARC methodology in this proposed extension request is identical to that already approved by the NRC. The extension of the ARC for Cycles 12 and 13 is intended to allow the licensee additional time to validate the W^* leak rate model through the performance of additional in-situ pressure testing of W^* indications, as discussed by the staff in the February 19, 1999, amendment. This review evaluates the proposed extension of the W^* amendment for Cycles 12 and 13.

3.0 EVALUATION

3.1 Steam Generator Tube Accident Leakage Integrity Assessment

In the original submittal supporting implementation of the W^* criteria for Cycles 10 and 11, the licensee developed a leakage model as documented in WCAP-14797. Because the leak rate model lacked data points, the licensee committed to perform in-situ pressure testing of W^* tubes and use these data to validate the W^* leakage model.

As discussed in the licensee's October 22, 1998, letter, W^* indications that exceed specified non-destructive examination (NDE) threshold values would be in-situ leak tested. In-situ testing would be continued until approximately 20 W^* indications were tested. If a sufficient number of leaking W^* indications were obtained to confirm the leakage model (i.e., the total leakage summed over all leaking indications is bounded by the calculated leakage for the leaking indications), in-situ testing for confirming the W^* leakage model would be discontinued. If a sufficient number of leaking W^* indications were not obtained after approximately 20 in-situ tests, the licensee would initiate discussions with the NRC staff on whether to continue in-situ testing.

During the implementation of the W^* amendment in Cycles 10 and 11, the licensee in-situ pressure tested 5 W^* tubes that met the in-situ testing criteria. No leakage was detected during these tests. By extending the implementation to Cycles 12 and 13, the licensee will be able to perform additional in-situ testing of W^* indications in order to confirm the adequacy of the W^* leakage model.

3.2 In-Situ Testing Screening Criteria

The previous criteria for Cycles 10 and 11 are documented in the licensee's letter dated October 22, 1998. The licensee defined threshold values to screen W^* indications for in-situ testing. The screening parameters included Plus Point maximum voltage, maximum depth, and crack length at maximum depth. Threshold values were defined for each of these parameters as follows:

- Indications with maximum Plus Point voltages exceeding the critical voltage (V_{crit}) are leak tested independent of other parameters. $V_{crit} = 4.0$ volts.
- Indications with maximum Plus Point voltages exceeding the voltage threshold (V_{thr}) have a depth evaluation performed (as discussed below). If less than five indications exceed the voltage threshold, a minimum of the five largest voltage indications are carried to the depth evaluation. $V_{thr} = 2.5$ volts.
- Depth evaluation. Indications with maximum depths exceeding the maximum depth leakage threshold (MD_{L-thr}) over a length greater than the deep crack length threshold (L_{L-min}) are leak tested. $MD_{L-thr} = 80$ percent. $L_{L-min} = 0.1$ inch.

To accommodate the testing of deplugged tubes and the testing of previously tested tubes, the licensee in its letter dated May 4, 2001, documented changes to the screening criteria. The screening criteria for Cycles 12 and 13 are summarized as follows:

1. For indications not previously in-situ tested, the following steps apply.

- Step 1: Indications with maximum Plus Point voltages exceeding the critical voltage (V_{crit}) are leak tested independent of other parameters. $V_{crit} = 4.0$ volts for non-deplugged tubes (i.e., tubes that have never been plugged); $V_{crit} = 6.0$ volts for deplugged tubes. Indications with maximum Plus Point voltages less than the critical voltage are carried to Step 2.
- Step 2: Indications with maximum Plus Point voltages exceeding the voltage threshold (V_{thr}) have a depth evaluation performed in Step 3. If less than five indications exceed the voltage threshold, a minimum of the five largest voltage indications are carried to the depth evaluation in Step 3. $V_{thr} = 2.5$ volts for non-deplugged tubes; $V_{thr} = 4$ volts for deplugged tubes.
- Step 3 (depth evaluation): Indications with maximum depths exceeding the maximum depth leakage threshold (MD_{L-thr}) over a length greater than the deep crack length threshold (L_{L-min}) are leak tested. $MD_{L-thr} = 80$ percent. $L_{L-min} = 0.1$ inch.

2. For indications previously in-situ tested, the following steps apply.

Step 1: Prior leak tested W^* indications with maximum Plus Point voltages greater than or equal to 1.25 times the prior leak test voltage are carried to Step 2. If the maximum Plus Point voltages are less than 1.25 times the prior leak test voltage, no in-situ leak testing is required.

Step 2: Indications with maximum Plus Point voltages exceeding the critical voltage (V_{crit}) are leak tested independent of other parameters. $V_{crit} = 4.0$ volts for non-deplugged tubes; $V_{crit} = 6.0$ volts for deplugged tubes. Indications with maximum Plus Point voltages less than the critical voltage are carried to Step 3.

Step 3: Indications with maximum Plus Point voltages exceeding the voltage threshold (V_{thr}) are carried to Step 4 for the depth evaluation. If less than five indications exceed the voltage threshold, a minimum of the five largest voltage indications are carried to the depth evaluation in Step 4. $V_{thr} = 2.5$ volts for non-deplugged tubes; $V_{thr} = 4$ volts for deplugged tubes.

Step 4 (depth evaluation): Indications with maximum depths exceeding the maximum depth leakage threshold (MD_{L-thr}) over a length greater than the deep crack length threshold (L_{L-min}) are leak tested. $MD_{L-thr} = 80$ percent. $L_{L-min} = 0.1$ inch.

As described above, the new criteria for Cycles 12 and 13 are the same as originally proposed for Cycles 10 and 11 except for the following:

1. indications that were leak tested in a prior in-situ test and have less than a 25 percent Plus Point voltage increase from the last test are exempt from testing; and

2. separate screening values for critical voltage and threshold voltage are established for deplugged and normal (non-deplugged) W* indications.

When a W* tube meets the in-situ criteria as discussed above, it is tested at the differential pressure observed during normal operation. If the tube does not leak, it can be returned to service. To avoid testing the same indication and to be able to test W* indications that may provide more useful information (i.e., ones that leak), the licensee proposed to only in-situ test previously in-situ tested indications when the Plus Point voltage of the indication increases by at least 25 percent. The staff finds this proposal acceptable since it increases the likelihood of testing an indication that leaks.

The second proposal made by the licensee involves establishing separate in-situ screening criteria for deplugged W* tubes. In DCP Unit 2 refuel 9 (2R9), 54 tubes were deplugged. Three of these tubes had indications whose voltages exceeded V_{crit} (i.e., $V_{crit} = 4.0$ volts). During in-situ testing, none of these leaked at normal operating differential pressure, so all were returned to service. All of these three tubes had significant voltage increases under plugged conditions. The reason for the voltage increase is not conclusive, but the licensee speculates that it is due to changes in crack face conditions such as oxidation or minor intergranular attack rather than crack growth in length and depth. Regardless of the reason, the licensee stated it is more conservative to raise the critical voltage value. The higher critical voltage value for deplugged tubes will allow the depth evaluation, which is less affected by the plugged tube condition, to have more influence on the in-situ selection. The staff finds this proposal acceptable since it increases the likelihood of testing an indication that leaks.

The in-situ testing screening criteria are established to test W* indications with the potential to leak so as to confirm the adequacy of the leak rate model.

3.3 Results of W* ARC Implementation in the Cycles 10 and 11

The results from implementing the W* repair criteria for the past two cycles are consistent with expectations.

3.4 TS Changes

The ARC for indications in the WEXTEX (W*) region of the steam generators was approved for Cycles 10 and 11 on February 19, 1999. In order to extend the applicability of the repair criteria to Cycles 12 and 13, the licensee has proposed the following changes to the TS.

1. Footnotes to TS 5.5.9.b.2.e, TS 5.5.9.d.1.f.2, and TS 5.5.9.d.1.k

Revise existing note, "Applicable for Units 1 and 2, Cycles 10 and 11 only, " to state "Applicable for Units 1 and 2, Cycles 10, 11, 12 and 13 only."

2. Footnote to TS 5.5.9.b.2.e

Revise existing note, "In-situ Testing will be performed in accordance with PG&E letter DCL 98-148 dated October 22, 1998, " to state "In-situ Testing will be performed in accordance with PG&E letters DCL 98-148 dated October 22, 1998, and DCL 01-052 dated May 4, 2001, for Cycles 10 and 11 and letter DCL 01-095 dated September 13, 2001, for Cycles 12 and 13."

3.5 Conclusion

The licensee proposed to amend the DCCP Units 1 and 2 technical specifications to permit application of the W* alternate steam generator tube repair criteria for Cycles 12 and 13. Based on the staff's previous evaluation of the repair criteria, structural and leakage integrity will be maintained in accordance with the regulatory requirements. On this basis, the staff concludes that the proposed changes to the DCCP technical specifications are acceptable. Due to the lack of confirmatory data, the licensee was unable to fully demonstrate the conservatism in the W* leak rate model. Therefore, the duration of the amendment was limited to two cycles of operation, Cycles 12 and 13, for each unit. During this interval, the licensee will perform additional in-situ pressure testing of tubes with degradation in WEXTEx expansions that exceed criteria established in this amendment in order to confirm the adequacy of the leak rate model. The licensee may consider proposing the W* repair criteria on a permanent basis once the leak rate model has been verified.

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 consideration and there has been no public comment on such finding (66 FR 55021). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). These amendments also involve changes in recordkeeping, reporting or administrative procedures or requirements. Accordingly, with respect to these items, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). 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: Z. Bart Fu

Date: April 29, 2002