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Amend. #23  
to DPR-80*

November 18, 1987

Docket No.: 50-275

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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  
San Francisco, California 94106

Dear Mr. Shiffer:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. 66541)

The Commission has issued the enclosed Amendment No. 23 to Facility Operating License No. DPR-80 for the Diablo Canyon Nuclear Power Plant, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application dated November 8, 1987. The amendment was authorized on an emergency basis by telephone and confirming letter on November 9, 1987.

The amendment authorizes, on a one-time basis, the surveillance requirement for exercising turbine valves to be deferred until seven days following Unit 2 return to power operation, but not later than January 26, 1988.

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,

original signed by

Charles M. Trammell, Project Manager  
Project Directorate V  
Division of Reactor Projects - III,  
IV, V and Special Projects

Enclosures:

- 1. Amendment No. 23 to DPR-80
- 2. Safety Evaluation

cc w/enclosures:  
See next page

~~DRSP/PD5  
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Diablo Canyon

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Diablo Canyon

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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. 23  
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 November 8, 1987, 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. 23, 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 was effective on November 9, 1987.

FOR THE NUCLEAR REGULATORY COMMISSION

*Charles M. Trammell for*  
George W. Knighton, Director  
Project Directorate V  
Division of Reactor Projects - III,  
IV, V and Special Projects

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: November 18, 1987



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. 22  
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 November 8, 1987, 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. 22, 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 was effective on November 9, 1987.

FOR THE NUCLEAR REGULATORY COMMISSION

*Charles M. Trammell for*  
George W. Knighton, Director  
Project Directorate V  
Division of Reactor Projects - III,  
IV, V and Special Projects

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: November 18, 1987

ATTACHMENT TO LICENSE AMENDMENT NOS. 23 AND 22  
FACILITY OPERATING LICENSE NOS. DPR-80 AND DPR-82  
DOCKET NOS. 50-275 AND 50-323

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

Remove

3/4 3-69

Insert

3/4 3-69

## INSTRUMENTATION

### 3/4.3.4 TURBINE OVERSPEED PROTECTION

#### LIMITING CONDITION FOR OPERATION

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3.3.4.1 At least one Turbine Overspeed Protection System shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3 (during turbine operation).

ACTION:

- a. With one stop valve or one control valve per high pressure turbine steam line inoperable or with one reheat stop valve or one reheat intercept valve per low pressure turbine steam line inoperable, restore the inoperable valve(s) to OPERABLE status within 72 hours, or isolate the turbine from the steam supply within the next 6 hours.
- b. With the above required Turbine Overspeed Protection System otherwise inoperable, within 6 hours isolate the turbine from the steam supply.

#### SURVEILLANCE REQUIREMENTS

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4.3.4.1.1 The provisions of Specification 4.0.4 are not applicable.

4.3.4.1.2 The above required Turbine Overspeed Protection System shall be demonstrated OPERABLE:\*

- a. At least once per 7 days by cycling each of the following valves through at least one complete cycle from the running position:
  - 1) Four high pressure turbine stop valves,
  - 2) Four high pressure turbine control valves,
  - 3) Six low pressure turbine reheat stop valves, and
  - 4) Six low pressure turbine reheat intercept valves.
- b. At least once per 31 days by direct observation of the movement of each of the above valves through one complete cycle from the running position.
- c. At least once per 18 months by performance of a CHANNEL CALIBRATION on the Turbine Overspeed Protection Systems.
- d. At least once per 40 months by disassembling at least one of each of the above valves and performing a visual and surface inspection of valve seats, disks and stems and verifying no unacceptable flaws or corrosion.

\*Performance of Surveillance Requirements 4.3.4.1.2.a. and b. is not required for Unit 1 until 7 days following Unit 2 return to power operation from the equipment outage which started on November 7, 1987, but not later than January 26, 1988.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 23 TO FACILITY OPERATING LICENSE NO. DPR-80  
AND AMENDMENT NO. 22 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

1.0 INTRODUCTION

By letter dated November 8, 1987, Pacific Gas and Electric Company (PG&E or the licensee) requested an amendment to the Technical Specifications appended to Facility Operating License No. DPR-80 for the Diablo Canyon Nuclear Power Plant, Unit No. 1. The proposed amendment would allow PG&E to defer, on a one-time basis, exercising the turbine valves until seven days following the return of Unit 2 to full power operation. An amendment responsive to this request was issued on November 9, 1987, under the Commission's procedure for emergency technical specification changes.

2.0 DISCUSSION AND EVALUATION

The turbines at Diablo Canyon Unit 1 consist of one high-pressure and three low-pressure turbines on a common shaft. Steam is admitted to the high-pressure turbine via four stop valves and four governor valves which are in series (paired) and therefore redundant with respect to stopping steam flow. Steam is admitted to the low-pressure turbines via two reheat stop and intercept valves for each turbine and are similarly redundant for stopping steam flow. All 20 valves are closed when the turbine overspeed control system detects turbine overspeed. The valves are held open during operation by hydraulic fluid pressure. When overspeed is detected, the hydraulic fluid pressure is "dumped" and the valves are then closed by large springs.

Technical Specification 4.3.4.1.2a and b. require that these valves be cycled weekly and directly observed during the cycling operation on a monthly basis. The purpose of the cycling is to assure that the valves are free to move in the event they are needed to close to prevent turbine overspeed.

Diablo Canyon Unit 2 was shut down on November 7, 1987 due to a malfunction of a motor-operated disconnect link on the Unit 2 main generator. Repairs may take as little as two weeks if a replacement unit can be found, and as much as two months if the unit should need to be rebuilt. The expectation is that a similar unit located at another nuclear plant can be adapted to Diablo Canyon and that repairs can be accomplished in a few weeks.

Diablo Canyon Unit 1 experienced a computer failure on November 5th such that the turbine is currently running on manual control. The computer is normally used for conducting the valve exercising. To do so manually would run the risk of a turbine trip; to repair the computer would require the unit to be shut down. PG&E desires to keep Unit 1 in full power operation and postpone the valve exercising until Unit 2 can be returned to power. Overspeed protection is not affected by the manual mode of operation.

PG&E has had fully successful operating experience with all the valves on both units. The valve cycling has been performed 125 times on Unit 1 and 85 times on Unit 2 with no identified valve sticking or other problems. In addition, four valves (one of each type) were disassembled during the refueling outage on Unit 1 in 1986; all eight high-pressure turbine valves were inspected on Unit 2 in 1987. No unfavorable observations were made with respect to closing function.

In further support of this one-time request for extension, PG&E cites WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency" (proprietary), which was prepared by Westinghouse for an owners group of plants with Westinghouse turbine-generators. The group members currently have requirements for weekly or monthly turbine valve testing. The report has been submitted to the NRC by Northern States Power Company in support of a request to substantially reduce the turbine valve test frequency for the Prairie Island plant.

PG&E's Diablo Canyon facility is analyzed in this report as well. PG&E states that the report justifies a test frequency of once per six months in order to satisfy the NRC acceptance criteria for acceptably low probabilities of damaging turbine overspeed. The NRC staff's review of this report is only beginning, so the request and related report is only a proposal at this point in time. Nevertheless, the information supplied is substantial and does appear to support less frequent testing for turbine valves. The NRC staff will report the results of its review of this report in a later safety evaluation.

Based on the foregoing, the NRC staff has concluded that PG&E has provide sufficient information to support the requested one-time delay in exercising the turbine valves. Therefore, we find the licensee's proposed change acceptable.

The NRC staff has made two changes to the amendment as proposed by PG&E. First, PG&E proposed that the valve exercising for Unit 1 be resumed within seven days following Unit 2 to full power. Since it is possible that Unit 2 might not exactly reach full (100%) power when repairs are completed, the NRC staff modified the proposal to require the seven day period to begin upon Unit 2 reaching power operation (defined as Mode 1 or greater than 5% power in the technical specifications). Second, the PG&E proposal was conditioned totally on the return of Unit 2 to power, and therefore the request for extension of time had no absolute end. The NRC staff added that in any case the

extension will expire by January 26, 1988. This was calculated based on PG&E's longest estimated time for repair (2 months), factored by 25% which is the usual extension of a surveillance test interval allowed by technical specification 4.0.2. The changes were discussed with and agreed to by PG&E.

### 3.0 BASIS FOR EMERGENCY TREATMENT

Under the Commission's regulations in 10 CFR 50.92, an emergency situation is deemed to exist when, as here, failure to act in a timely way would result in derating or shutdown of a nuclear power plant. Licensees are also required to explain why the situation occurred and why it could not be avoided.

Absent the extension of time granted by the amendment, compliance with the turbine exercise requirement was due prior to 11:59 p.m. on November 9. Past this time, PG&E would have to had to declare the turbine overspeed protection system inoperable and isolate the turbine from the steam supply within six hours. This, of course, would require a shutdown.

A November 7, 1987, Unit 2 was shut down, and PG&E discovered that the valve exercise could not be performed in the normal manner due to the computer failure discussed earlier. PG&E made a timely application for an amendment and provided an adequate explanation as to why the situation could not be avoided.

We conclude that PG&E satisfied the requirements for emergency consideration of its request.

### 4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission may make a final determination, pursuant to the procedures in (10 CFR 50.91), that a proposed amendment to an operating license for a facility licensed under paragraph 50.21(b) or paragraph 50.22 or a testing facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

PG&E has provided the following evaluation:

- (1) Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

As discussed in Section B.4, the DCPD turbine overspeed protection system has been demonstrated by testing to have a proven reliability of valve operability.

WCAP-11525 provides an evaluation of the probability of turbine missile generation for the purpose of justifying a reduction in the frequency of turbine valve testing. In a letter to Westinghouse Electric Corporation dated February 2, 1987 (C.E. Rossi, USNRC to J.A. Martin, Westinghouse), the NRC established acceptable criteria for the probability of generating a turbine missile. The evaluation in WCAP-11525 shows that the probability of a DCPD missile ejection event for turbine valve test intervals up to six months is less than the established acceptance criteria. Based on the results of WCAP-11525 the suspension of the Unit 1 turbine valve testing until Unit 2 returns to full power from the equipment outage which started on November 7, 1987, does not represent a significant increase in the probability of turbine missile event. Suspension of the Unit 1 turbine valve testing has no effect on the consequences of a turbine missile event.

Therefore, based upon the demonstrated reliability of the turbine valve system and the results of WCAP-11525, the proposed one time relief Unit 1 turbine valve testing license amendment does not represent a significant increase in the probability or consequences of an accident previously evaluated.

- (2) Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed amendment does not change the kind, number or type of overspeed protection components available. Based on the results of WCAP-11525, suspension of the Unit 1 turbine valve testing until Unit 2 returns to full power from the equipment outage which started on November 7, 1987 does not result in a significant change in the failure rate or change failure modes for the turbine valves. Therefore, the proposed one time relief Unit 1 turbine valve testing license amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- (3) Does the change involve a significant reduction in a margin of safety?

As discussed in Section B.4, the DCPD turbine overspeed protection system has been demonstrated by testing to have proven reliability.

The NRC has established acceptance criteria for the probability of generating a turbine missile. WCAP-11525 demonstrates that significant relaxation of the existing test interval can be obtained without increasing turbine missile generation probabilities above those previously accepted by the NRC. Based on the results in WCAP-11525, suspension of the Unit 1 turbine valve testing until Unit 2 returns to full power from the equipment outage which started on November 7, 1987 does not represent a significant increase in the probability of a turbine missile event. Remaining within the established acceptance criteria ensures that the probability of damaging safety-related components, equipment, or structures as a result of generation of a turbine missile does not exceed the limits reported in the safety analysis.

Therefore, based upon the high reliability of the turbine valve system and the results of WCAP-11525, the proposed one time relief Unit 1 turbine valve testing license amendment does not involve a significant reduction in a margin of safety.

The NRC staff has reviewed the licensee's analyses presented above and finds that it acceptably addresses the three criteria. The State of California was consulted in this matter and had no comments. Therefore, the NRC staff has made a final determination that the amendment involves no significant hazards consideration.

#### 5.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have 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 determined above that the amendment involves no significant hazards consideration. 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 this amendment.

#### 6.0 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 (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Charles M. Trammell

Dated: November 18, 1987