

January 29, 2001

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 94177

SUBJECT: DIABLO CANYON NUCLEAR POWER PLANT, UNITS NO. 1 AND 2 -
ISSUANCE OF AMENDMENTS (TAC NOS. MA9082 AND MA9083)

Dear Mr. Rueger:

The Commission has issued the enclosed Amendment No. 144 to Facility Operating License No. DPR-80 and Amendment No. 143 to Facility Operating License No. DPR-82 for the Diablo Canyon Nuclear Power Plant (DCPP), Units No. 1 and 2, respectively. The amendments are in response to your application dated May 12, 2000, as supplemented by letter dated January 25, 2001.

These amendments authorize revisions to the Final Safety Analysis Report UPDATE to incorporate (1) a design upgrade of the refueling water purification (RWP) system to permit reclassification of this system from Design Class II/non-seismic Category 1 to Design Class I/seismic Category 1 to allow filtering of the refueling water storage tank (RWST) water while the RWST is required to be operable, and (2) the use of a temporary reverse osmosis skid mounted system to reduce RWST silica concentration levels while RWST is required to be operable following upgrade of the RWP system to satisfy reactor coolant chemistry limits.

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 & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-275
and 50-323

Enclosures: 1. Amendment No. 144 to DPR-80
2. Amendment No. 143 to DPR-82
3. Safety Evaluation

cc w/encls: See next page

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*For previous concurrences see attached ORC

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DATE	1/26/01	1/26/01	1/24/01	1/21/01

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. 144

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 May 12, 2000, as supplemented by letter dated January 25, 2001, 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, by Amendment No. 144, the license is amended to authorize revision of the Final Safety Analysis Report (FSAR) Update, as set forth in the application for amendment by Pacific Gas and Electric Company dated May 12, 2000, and supplement dated January 25, 2001. Pacific Gas and Electric Company shall update the FSAR Update to reflect (1) a design upgrade of the refueling water purification (RWP) system to permit reclassification of the system from Design Class II/non-seismic Category 1 to Design Class I/seismic Category 1 to allow filtering of the refueling water storage tank (RWST) water while the RWST is required to be operable; and (2) the use of a temporary reverse osmosis skid mounted system to reduce RWST silica concentration levels while RWST is required to be operable following upgrade of the RWP system, as authorized by this amendment in accordance with 10 CFR 50.71(e).

3. This license amendment is effective as of its date of issuance and shall be implemented in the next periodic update to the FSAR Update, following upgrade of the refueling water purification system, in accordance with 10 CFR 50.71(e). Implementation of the amendment is the incorporation into the FSAR Update the changes discussed above, as described in the licensee's application dated May 12, 2000, and supplement dated January 25, 2001, and evaluated in the staff's Safety Evaluation attached to this amendment.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Date of Issuance: January 29, 2001

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 143

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 May 12, 2000, as supplemented by letter dated January 25, 2001, 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, by Amendment No. 143, the license is amended to authorize revision of the Final Safety Analysis Report (FSAR) Update, as set forth in the application for amendment by Pacific Gas and Electric Company dated May 12, 2000, and supplement dated January 25, 2001. Pacific Gas and Electric Company shall update the FSAR Update to reflect (1) a design upgrade of the refueling water purification (RWP) system to permit reclassification of the system from Design Class II/non-seismic Category 1 to Design Class I/seismic Category 1 to allow filtering of the refueling water storage tank (RWST) water while the RWST is required to be operable; and (2) the use of a temporary reverse osmosis skid mounted system to reduce RWST silica concentration levels while RWST is required to be operable following upgrade of the RWP system, as authorized by this amendment in accordance with 10 CFR 50.71(e).

3. This license amendment is effective as of its date of issuance and shall be implemented in the next periodic update to the FSAR Update, following upgrade of the refueling water purification system, in accordance with 10 CFR 50.71(e). Implementation of the amendment is the incorporation into the FSAR Update the changes discussed above, as described in the licensee's application dated May 12, 2000, and supplement dated January 25, 2001, and evaluated in the staff's Safety Evaluation attached to this amendment.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Date of Issuance: January 29, 2001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 144 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 143 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 May 12, 2000, as supplemented by letter dated January 25, 2001, Pacific Gas and Electric Company (the licensee, PG&E) submitted a License Amendment Request (LAR) for the review and approval of changes to allow a design upgrade of the reactor water purification (RWP) system and the use of a temporary reverse osmosis skid installation to support refueling water storage tank (RWST) cleanup during power operation for Diablo Canyon Units 1 and 2. The purpose of this upgrade is to permit filtering of the RWST water while the RWST is required to be operable. The RWP system is a non-seismic Category I/Design Class II system which will be upgraded to Design Class I/seismic Category I system. A temporary reverse osmosis skid mounted system is used to reduce RWST silica concentration levels while RWST is required to be operable following upgrade of the RWP system. The control of silica is required to meet reactor coolant chemistry limits.

The January 25, 2001, supplemental letter provided additional clarifying information, 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 published in the *Federal Register* on July 12, 2000 (65 FR 43050).

2.0 EVALUATION

2.1 Reactor Water Purification System Upgrade

The RWP system is a subsystem of the spent fuel pool cooling system. The primary function is to maintain optical clarity of the spent fuel pool water. The RWP system is also used to purify the refueling water in the refueling canal and the RWST. The RWP system is separated from the seismic Category I/Design Class I RWST by a normally closed, manually operated, design class I code boundary valve. Prior to July 2, 1998, the plant procedures allowed interconnection of the RWP system and the RWST while the RWST was required to be operable, for cleanup of the RWST inventory. To justify this configuration, operator action was credited to close the manual code boundary valve if a seismic, loss-of-coolant accident (LOCA), or main steamline break (MSLB) event took place. This operator action was intended to prevent a loss of RWST inventory below technical specification (TS) limits if a seismic event

induced a system pressure boundary failure of the RWP piping while the code boundary valve is open. During investigation of this manual operator action time assumption, it was discovered that operator action could not be taken in sufficient time to ensure that the design required volume is maintained in the RWST to perform its function following a LOCA coincident with a seismic event. An immediate corrective action was taken on July 2, 1998, to maintain the code boundary valve closed when the RWST is required to be operable. This action ensures that the RWST remains operable and is capable of performing its safety function.

To allow the use of the RWP system while the RWST is required to be operable, the RWP system will be upgraded from Design Class II/non-seismic Category I to Design Class I/seismic Category I. These RWP upgrades will ensure RWP pressure boundary integrity is maintained during a seismic event and provide reasonable assurance of maintaining the RWST water inventory above the minimum required by the TS. The RWP system upgrades will eliminate operator action to close the code boundary valve between the RWST and the RWP system following a LOCA or MSLB coincident with a seismic event. The RWP system will clean up the RWST contents through the in-series RWP filter, spent fuel pool demineralizer, and spent fuel pool resin trap filter. The RWP system will remove radiological impurities from the RWST contents to ensure RWST activities and radiation exposure rates are within 10 CFR Part 20 limits and as low as reasonably achievable.

The RWP system upgrades will consist of a design change involving seismically qualifying the RWP system to meet seismic category I criteria. This involves analyzing, modifying, or replacing RWP system piping and associated equipment, component, and supports as necessary. The licensee will perform stress analysis of pipe and pipe supports in accordance with design class I criteria. In addition, the licensee will perform the following:

1. Examination of non-destructive pipe welds at random locations.
2. Verifications of material properties of the stainless steel pipe at random locations.
3. Torque Inspections of expansion anchor bolts on all modified pipe supports.
4. Evaluate all system components such as pumps and demineralizers, etc. to verify their structural and pressure boundary integrity under Design Class I requirements.
5. Include the RWP system in PG&E's inservice inspection program under the rules of ASME Section XI, Class 3.
6. Define Design Class I boundaries within the RWP system, and impose administrative controls to ensure Design Class I isolation from Design Class II is maintained.

The RWP system upgrade to seismic category I criteria will ensure the pressure boundary integrity of the piping aligned to the RWST is maintained during a seismic event while the RWP system is aligned to the RWST.

2.2 Temporary Reverse Osmosis Skid Installation to Support RWST Cleanup

It is proposed to use a reverse osmosis (RO) skid mounted system to reduce RWST silica concentration levels while the RWST is required to be operable following upgrade of the RWP system. Based on a projected RWST silica concentration of approximately 6 ppm following refueling cycle 10 of Diablo Canyon Units 1 and 2, and a desired silica concentration limit of below 1 ppm, it is estimated that RWST silica removal operation will take approximately 1 month to complete during the cycle.

To support use of an RO system to reduce silica concentration in the RWST, a design change to the RWST piping will be made. A design class I passive flow limiting device will be added to the RWST drain piping connection. The flow limiting device will be sized to restrict the maximum leakage from the RWST inventory such that the minimum volume required by the RWST TS is maintained under maximum pressure drop conditions during a 1 hour operator action period required to isolate the RO system. In addition, a design class I manual isolation valve will be added upstream or downstream of the flow limiting device, such that the capability is available to isolate the Design Class I RWST piping from the non-Design Class I RO system. All piping and valves will be designed or qualified to Design Class I/seismic Category I up to the discharge of the flow limiting device or the isolation valve. This will ensure RWST pressure boundary integrity during a seismic event.

The non-seismic Category I/non-Design Class I RO system is contained on a skid. The RO system suction will be connected by a hose to the RWST drain piping connection, which is located at the bottom of the RWST outside the auxiliary building. The RO system discharge will be connected by a hose to the RWST overfill line at an open ended connection located in the cask washdown area of the auxiliary building. The RWST overfill line empties into the top of the RWST such that no RWST inventory is lost due to a failure of the RO system discharge hose. The RO system boron recovery rate will be verified through testing prior to initial installation into the plant. Prior to the batch operation of the RO system, it will be verified that there is adequate RWST boron concentration margin such that the concentration will be maintained above the RWST TS minimum boron concentration during the RO system operation. The RO system operating procedures will contain the minimum RWST volume and boron concentration requirements prior to starting the RO system. During initial startup of the RO system, a dedicated operator will walk down the system and check for leaks. During the operation of the RO system while the RWST is required to be operable, the dedicated operator will have continuous capability to communicate with the control room. Potential boron dilution of the RWST inventory during tank processing through the RWP system is prevented by administratively maintaining closed all manual boundary valves within the RWP system while the RWP system is connected to the RWST. Following each batch operation of the RO system, RWST mixing and sampling will be performed to verify the RWST boron concentration, and boron additions to the RWST will be made accordingly. These measures will ensure the TS minimum RWST boron concentration is available to mitigate the short term consequences of a small break LOCA, large break LOCA, or main steam line break.

Thus, the installation and use of an RO system will allow removal of silica from the RWST while the RWST is required to be operable. The control of silica is required to meet reactor coolant chemistry limits. Maintaining low reactor coolant system silica concentrations minimizes fuel clad crud deposition, which can adversely affect the corrosion resistance and heat transfer

properties of the fuel clad. The effective use of an RO system to reduce RWST silica concentration during power operation has been proven at other nuclear power plants such as the South Texas Project and Crystal River.

2.3 Conclusion

The upgrade to the RWP system piping to seismic Category I will ensure that the pressure boundary integrity and operability of the RWP system is maintained during a seismic event and thus will prevent a loss of RWST inventory while the RWP system is aligned to the RWST. Neither the RWP system nor the RO system are credited for safe shutdown of the plant or accident conditions. The upgrade of the RWP system and use of the RO system do not impact any other systems and thus cannot create a new failure mode. Additionally, planned adequate compensatory measures for this enhancement and proposed credit for operator action is acceptable. Therefore, we find this proposal acceptable.

3.0 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.

4.0 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 (65 FR 43050). 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.

5.0 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 Contributors: Kulin Desai
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Date: January 29, 2001