



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 30, 2009

Mr. John T. Conway
Site Vice President and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 3, Mail Code 104/6/601
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: CHANGES TO TECHNICAL SPECIFICATION 3.7.5, AUXILIARY FEEDWATER SYSTEM AND TECHNICAL SPECIFICATION 3.7.6, CONDENSATE STORAGE TANK AND FIRE WATER STORAGE TANK (TAC NOS. MD8471 AND MD8472)

Dear Mr. Conway:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 204 to Facility Operating License No. DPR-80 and Amendment No. 205 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 (TSs) in response to your application dated April 3, 2008, as supplemented by letters dated June 20, October 1, November 6, and December 16, 2008.

The amendments revise TS 3.7.5, "Auxiliary Feedwater (AFW) System," to remove Surveillance Requirement (SR) 3.7.5.6 and revise TS 3.7.6, "Condensate Storage Tank (CST) and Fire Water Storage Tank (FWST)," to remove the FWST level requirements, revise the CST level requirements, and revise TS 3.7.6 to be consistent with the NUREG-1431 Standard Technical Specifications (STS).

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,

A handwritten signature in cursive script that reads "Alan Wang".

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

Docket Nos. 50-275 and 50-323

Enclosures.

1. Amendment No. 204 to DPR-80
2. Amendment No. 205 to DPR-82
3. Safety Evaluation

cc w/encs: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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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. 204
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 April 3, 2008, as supplemented by letters dated June 20, October 1, November 6, and December 16, 2008, 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.

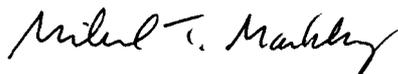
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. DPR-80 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 204, 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 is effective as of its date of issuance and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility
Operating License No. DPR-80
and Technical Specifications

Date of Issuance: March 30, 2009



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 205
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 April 3, 2008, as supplemented by letters dated June 20, October 1, November 6, and December 16, 2008, 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 (SSER 32, Section 8)* and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 205, 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 is effective as of its date of issuance and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility
Operating License No. DPR-82
and Technical Specifications

Date of Issuance: March 30, 2009

ATTACHMENT TO LICENSE AMENDMENT NO. 204

TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 205 TO FACILITY OPERATING LICENSE NO. DPR-82

DOCKET NOS. 50-275 AND 50-323

Replace the following pages of the Facility Operating License Nos. DPR-80 and DPR-82, and 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.

Facility Operating License Nos. DPR-80 and DPR-82

REMOVE

INSERT

-3-

-3-

Technical Specifications

REMOVE

INSERT

3.7-12

3.7-12

3.7-13

3.7-13

- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This License shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The Pacific Gas and Electric Company is authorized to operate the facility at reactor core power levels not in excess of 3411 megawatts thermal (100% rated power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 204, 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) Initial Test Program

The Pacific Gas and Electric Company shall conduct the post-fuel-loading initial test program (set forth in Section 14 of Pacific Gas and Electric Company's Final Safety Analysis Report, as amended), without making any major modifications of this program unless modifications have been identified and have received prior NRC approval. Major modifications are defined as:

- a. Elimination of any test identified in Section 14 of PG&E's Final Safety Analysis Report as amended as being essential;

- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
 - (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This License shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level
The Pacific Gas and Electric Company is authorized to operate the facility at reactor core power levels not in excess of 3411 megawatts thermal (100% rated power) in accordance with the conditions specified herein.
 - (2) Technical Specifications (SSER 32, Section 8)* and Environmental Protection Plan
The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 205, 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) Initial Test Program (SSER 31, Section 4.4.1)
Any changes to the Initial Test Program described in Section 14 of the FSAR made in accordance with the provisions of 10 CFR 50.59 shall be reported in accordance with 50.59(b) within one month of such change.

*The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Verify by administrative means OPERABILITY of backup water supply.	4 hours <u>AND</u> Once per 12 hours thereafter
	<u>AND</u> A.2 Restore CST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4, without reliance on steam generator for heat removal.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify the CST water volume is \geq 200,000 gallons for Unit 1 and \geq 166,000 gallons for Unit 2.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.2	<p>-----NOTE-----</p> <p>Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 650 psig in the steam generator.</p> <p>-----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>	In accordance with the Inservice Test Program.
SR 3.7.5.3	<p>-----NOTE-----</p> <p>Not applicable in MODE 4 when steam generator is relied upon for heat removal.</p> <p>-----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.4	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 650 psig in the steam generator. 2. Not applicable in MODE 4 when generator is relied upon for heat removal. <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.5	Not used.	



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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 204 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 205 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 April 3, 2008, as supplemented by letters dated June 20, October 1, November 6, and December 16, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML081010207, ML081820180, ML082830134, ML083260564, and ML083590344, respectively) (References 1 through 5), Pacific Gas and Electric Company (PG&E, 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 supplemental letters dated June 20, October 1, November 6, and December 16, 2008, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on July 29, 2008 (73 FR 43956).

The proposed amendments would revise TS 3.7.5, "Auxiliary Feedwater (AFW) System," to remove Surveillance Requirement (SR) 3.7.5.6 and revise TS 3.7.6, "Condensate Storage Tank (CST) and Fire Water Storage Tank (FWST)," to remove the FWST level requirements, revise the CST level requirements, and revise TS 3.7.6 to be consistent with the NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," Volume 1, Revision 3 (Reference 6). Specifically, these changes reflect design changes made to the CSTs and are necessary to support the on-line refurbishment of the FWST and replacement of the recirculation piping for the fire water pumps. The design changes to the CSTs are intended to eliminate the reliance on the FWST for additional seismically-qualified feedwater supply and, as a result, make the existing TS requirements for the FWST unnecessary.

The original Westinghouse Model 51 steam generators (SGs) are being replaced with new Westinghouse Model Delta 54 SGs. The SG replacements were performed for DCPP, Unit 2 during 2R14 outage in 2008 and are being performed for DCPP, Unit 1 during the current 1R15 outage that started on January 26, 2009. For DCPP, Unit 1 this modification is scheduled to be completed by March 25, 2009.

2.0 REGULATORY EVALUATION

In Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Technical specifications," the NRC established its regulatory requirements related to the content of TS. Pursuant to 10 CFR 50.36, TSs 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. The rule does not specify the particular requirements to be included in a plant's TS. As stated in 10 CFR 50.36(c)(2)(i), the "[l]imiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility." The regulations in 10 CFR 50.36(c)(3) state that "[s]urveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components will be maintained within safety limits, and that the limiting conditions for operation will be met."

In Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," General Design Criteria (GDC) 2 states that "structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions." As such, the NRC staff reviewed the structural aspects of the CST modifications for compliance with NRC Regulatory Guide 1.29, "Seismic Design Classification" (Reference 8), and the review requirements and acceptance criteria in NUREG-0800, "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants" (Reference 7), Section 3.8.4, "Other Seismic Category I Structures," and Section 3.7.2, "Seismic System Analysis."

NRC Generic Letter (GL) 81-21, "Natural Circulation Cooldown" (Reference 9) identified the possibility of voiding in the upper head of the reactor vessel as a result of cooling the reactor coolant system (RCS) too quickly during natural circulation conditions, which would be encountered during a loss-of-offsite power (LOOP). GL 81-21 requested licensees to: 1) demonstrate that a controlled natural circulation cooldown would not result in voiding, and 2) provide verification that the available supply of feedwater was sufficient to support the cooldown method. In its response to GL 81-21, the licensee demonstrated that voiding would not occur during a natural circulation cooldown if the cooldown rate was reduced from 50 degrees Fahrenheit (°F) per hour to 25 °F per hour. The reduced cooldown rate resulted in an extended cooldown period and was determined to require more water than the safety-grade portion of the CST. In order to assure the storage of enough safety-grade water to meet this scenario, DCPD added the FWST as an additional water source in TS 3.7.6 and added the requirement for an FWST flowpath aligned to the AFW in TS 3.7.5. Any changes to CST or FWST capacity must continue to assure availability of a safety-grade source of water for AFW that is large enough to meet the required volume of the worst-case natural circulation cooldown identified in GL 81-21.

Appendix R to 10 CFR 50, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979" (the Fire Protection Rule), requires water sources for fire protection systems. The FWST is one source for the DCPD fire protection system, in addition to providing a water supply to the AFW system. The proposed changes were reviewed to ensure they would

not create a conflict with the Fire Protection Rule. The guidance of NRC GL 88-12, "Removal of Fire Protection Requirements from Technical Specifications" (Reference 10), was also considered during the review of these proposed changes.

3.0 TECHNICAL EVALUATION

The CST stores and supplies demineralized water to the AFW system and it also accommodates the normal makeup and rejection water requirements of the steam plant. To minimize oxygen intrusion in the feedwater supply, the CST has a floating roof. The designed minimum CST capacity was based on providing an adequate source of water to the AFW system for cooldown of the RCS upon loss of normal feedwater.

The CST is a Seismic Category I structure, but has multiple connections to non-seismically-qualified piping. Consequently, only the volume of water below these connections can be credited as a safety-grade source, which is currently approximately 164,678 gallons.

The FWST provides a Seismic Category I source of water to the fire protection system. Currently, the DCPD TS contains requirements to reserve a portion of the FWST water volume for the purpose of supplementing the CST water volume as a safety-grade source of water to the AFW system.

The changes proposed in this license amendment request (LAR) support the on-line refurbishment of the FWST and take advantage of modifications made to the CST. The licensee has proposed the following TS modifications:

- Remove SR 3.7.5.6 from TS 3.7.5.
- Revise TS 3.7.6 as follows:
 - The title is revised from "Condensate Storage Tank (CST) and Fire Water Storage Tank (FWST)" to "Condensate Storage Tank (CST)".
 - The Limiting Condition for Operation (LCO) is revised from "The CST level shall be $\geq 41.3\%$ and the FWST level shall be $\geq 22.2\%$ for one unit operation and $\geq 41.7\%$ for two unit operation" to "The CST shall be OPERABLE."
 - Condition A is revised from "CST or FWST level not within limit" to "CST inoperable."
 - Required Action A.2 is revised from "Restore CST or FWST level to within limit" to "Restore CST to OPERABLE status."
 - Surveillance Requirement (SR) 3.7.6.1 is revised from "Verify the CST level is $\geq 41.3\%$ " to "Verify the CST water volume is $\geq 200,000$ gallons for Unit 1 and $\geq 166,000$ gallons for Unit 2."
 - Remove SR 3.7.6.2.

3.1 Reduction of CST Minimum Storage Requirements

The LAR proposed to reduce the total volume of safety-grade water available for the AFW from 222,600 gallons (per tank per unit) to 200,000 gallons for Unit 1 and 166,000 gallons for Unit 2. The NRC staff reviewed the assumptions and calculations that were associated with this reduction to determine that the change would not challenge the safety-related function of the AFW.

The original required volume of safety-grade water (222,600 gallons for each unit) was determined in the licensee's response to GL 81-21. The CSTs of both units contain a safety-grade volume of 164,678 gallons and the remainder of the safety-grade water is contained in the FWST (57,922 gallons for one-unit operation, and 115,844 gallons for two-unit operation). These required volumes are reflected in the current TS level-based surveillances.

The licensee indicated that the proposed changes would be made to take advantage of a design modification to the CST that would enable the CST to provide all the water necessary to remove decay and sensible heat from the DCCP RCS. In its submittal, the licensee stated that when upgraded, the CST for each unit would have sufficient available water to meet the RCS heat removal design bases.

The CST supplies the AFW system with safety-grade water. The AFW system for each DCCP unit has two 100 percent capacity motor-driven AFW feedwater pumps and one 200 percent capacity turbine-driven AFW pump. The licensee defines 100 percent capacity as the flow required to two SGs during the AFW design-basis accident (loss of normal feedwater flow).

The NRC staff review of the license amendment request (LAR) focused on the scenarios that would provide the greatest challenges to the revised CST water supply volume (without additional water supplied by the FWST). The licensee identified in its June 20, 2008, letter that the limiting scenario event, for AFW supply, is the volume of safety-grade water required for the cooldown of the RCS to the residual heat removal (RHR) system entry conditions, followed by RCS cooldown to cold shutdown conditions using the RHR system (Reference 2). This scenario results in the minimum required CST volume, assuming a LOOP and a reduced cooldown rate, as specified in NRC GL 81-21. During cooldown to RHR system entry conditions, Emergency Operating Procedure (EOP) E0.2, "Natural Circulation Cooldown," requires that the SG level be maintained between 20 percent and 65 percent, which is above the Narrow Range lower level tap (0 percent level), which is the level assumed in the CST minimum storage usable volume calculation. The licensee added that with the upgrade of the CST, the CST level is maintained above the CST low level alarm tap (20 percent) and condenser hotwell makeup valve trip (closed) setpoint (60.8 percent), which is 24 inches above the top of new funnel assemblies (referred to by the licensee as "plenums"). This procedure is used to accomplish a natural circulation RCS cooldown and depressurization to cold shutdown, without forming a void in the reactor vessel upper head, and with no flow stagnation in any inactive loops.

When DCCP, Unit 1 was updated, circa 1996, the rated core power assumed in the calculation was changed to reflect the actual updated core power of 3411 megawatts thermal (MWt), therefore, reducing the required CST volume to 216,900 gallons. A TS change was not

requested to reflect the required reduced CST volume at that time. The second significant change to the minimum storage usable volume calculation was made in conjunction with the SG replacement program. As provided by the licensee in its supplement dated November 6, 2008 (Reference 4), to the LAR, the level restoration was reduced from the no load programmed level to the Narrow Range lower level tap. This reduced the required inventory from 216,900 gallons to 196,881 gallons. The NRC staff reviewed the assumptions and conditions of this calculation to verify that the change in TS requirements would not compromise the plant's ability to accommodate the scenario of GL 81-21 and to ensure that any radiological effects were bounded by existing analyses.

The required volume for the DCP, Unit 2 CST is 166,000 gallons due to a design difference between the two reactor vessels. Modifications were made to the DCP Unit 2 reactor internals in 2006, which converted DCP, Unit 2 from a T_{hot} upper head design to a T_{cold} upper head design. With the T_{cold} upper head design, the fluid flow through the reactor internals is different and the temperature of the upper head fluid is colder. Due to this reduction in upper head temperature, the DCP, Unit 2 RCS can be cooled at a faster rate without creating voids. The analysis for the DCP, Unit 2 CST minimum volume assumes a 50 °F per hour cooldown and a shorter time required to reach RHR entry conditions, resulting in a smaller required CST volume.

The Narrow Range lower level tap (0 percent level) is situated below the top of the U-tube bundle in the Model Delta 54 SG. Since this is the assumed level in the calculation, the NRC staff issued a request for additional information (RAI), dated November 4, 2008 (ADAMS Accession No. ML090690432) to verify that any primary-to-secondary leakage from exposed tubes and subsequent radiological release via the atmospheric steam dumps would be bounded by existing analysis. In the licensee's response dated December 15, 2008 (Reference 5), to this RAI, a comparison is made between the maximum possible releases of the worst-case natural circulation cooldown and the design basis steam generator tube rupture (SGTR). A number of conservative assumptions were made in calculating the possible release during the worst-case natural circulation cooldown, ensuring that the release identified was larger than any actual release during this scenario. The comparison showed that the maximum release during this scenario was far below the expected release from the SGTR event.

GL 81-21 identified the importance of plant procedures to help operators avoid voiding during the worst-case natural circulation cooldown scenario. In an email dated September 21, 2008 (ADAMS Accession No. ML082831443), the NRC staff requested information regarding how the change in SG level restoration was reflected in the plant procedures. In its letter dated November 6, 2008 (Reference 4), the licensee stated that the plant procedure for this scenario would instruct the operators to maintain SG level between 20 and 65 percent. Maintaining SG level at or above the assumed analysis level (Narrow Range lower level tap (0 percent level)) ensures that the conditions within the SG bound the heat removal assumptions in the revised minimum storage usable volume calculation. The NRC staff agrees that maintaining a level higher than that assumed in the calculation will not violate the conditions assumed in the calculation and will not prevent the AFW from delivering the full volume of water required to cool the RCS to RHR entry conditions.

The licensee has shown that the modified CSTs have enough water inventory to supply the AFW system, without drawing any water from the FWSTs, to meet the shutdown and cooldown

requirements of DCP, Units 1 and 2 for both normal and post-accident conditions. Therefore, the NRC staff concludes that the licensee's proposed TS changes pertaining to the CSTs are acceptable.

3.2 Expansion of CST Safety-Grade Volume

The original safety-grade volume of each CST is 164,678 gallons. This volume is insufficient to meet the proposed CST operability requirement of $\geq 200,000$ gallons for DCP Unit 1 and $\geq 166,000$ gallons for DCP Unit 2. To meet this proposed CST operability requirement, the licensee designed modifications to both CSTs to increase the safety-grade volume of the CSTs. These modifications were made under 10 CFR 50.59. At the time of this review, the licensee had completed the modification of the DCP Unit 2 CST and the DCP Unit 1 CST is being modified during the current refueling outage that started on January 26, 2009. The modifications for DCP Unit 1, will be completed by March 25, 2008.

The CST modifications involve attaching plenums (i.e., a half pipe) to the inside wall of the CST around the four non-seismically-qualified nozzles, effectively raising the suction point of these lines. Raising the suction point of these lines limits the amount of CST inventory that will be lost in the event of a failure of these non-seismic lines, leaving a greater safety-grade volume in the CST for the AFW system. The modifications were designed to accommodate the original TS-required volume (222,600 gallons) by increasing the safety-grade volume to 224,860 gallons. Identical modifications were made to DCP, Unit 1 and Unit 2 CSTs, irrespective of the difference in volume requirements. This new capacity will provide a substantial margin to the newly calculated minimum storage requirements of 200,000 gallons for DCP Unit 1 and 166,000 gallons for DCP Unit 2.

The NRC staff reviewed the proposed designs and calculations associated with the modification of the CSTs to verify the stated increase in safety-grade volume was accurate and sufficient to satisfy the requirements of the most limiting case natural circulation cooldown described in the licensee's response to GL 81-21.

By letter dated September 21, 2008 (ADAMS Accession No. ML082670267), the NRC staff issued an RAI asking the licensee to evaluate the possible impact of interactions between the plenums and the floating roof on the safety function of the CST. By its letter dated November 6, 2008 (Reference 4), the licensee described modifications being made to the floating roof as "having cut-outs and anti-rotating guides," so that the roof will not be affected by the plenums as the water level decreases in the CST. The licensee confirmed that there was no interaction between the plenums and floating roof that could adversely affect the supply of water to AFW; preventing the CST from performing its safety function.

3.2.1 Seismic Qualification of the Modifications

The CST for each unit is a DCP Design Class I tank, meeting the Seismic Category I criteria. A CST is a vertical carbon steel tank totally encased with a 1-foot-thick reinforced concrete wall, 40-feet in diameter and 47-feet in height. It has a floating roof to minimize oxygen absorption by the stored water. All nozzles attached to the tank are part of the tank design and are classified as Design Class I and Seismic Category I. The nominal capacity of each CST is 425,000 gallons, which currently includes a minimum reserve of 164,678 gallons of usable water

for AFW system pump operation, and a drainable but not usable volume of approximately 13,000 gallons. The 164,678 gallon reserve is based on the required water level of 41.3 percent in TS 3.7.6, which corresponds to 210 inches or 17.5 feet of tank level above the vortex suppression cage. The water inventory for other uses of the CST is obtained through four nozzles located 19-feet above the AFW suction pipe nozzles. These nozzles are connected to Design Class II piping, but the integrity of this piping following a seismic event is not assured. Thus, the CST inventory level above the 164,678-gallon level is not credited as a safety-grade water source. However, the design of CSTs as Seismic Category I ensures the availability of the AFW supply following a seismic event.

Currently, the total required inventory of usable safety-grade water for AFW operation is 222,600 gallons. To provide the difference between the total required and the current CST inventory solely from the CST, PG&E implemented an upgrade to the DCP Unit 2 CST in its 14th refueling outage, and has upgraded the DCP Unit 1 CST during its 15th refueling outage. The upgrade for each CST consists in attaching Seismic Category I stainless steel plenums in the interior of the tank around the existing four nozzles at the 19-foot elevation above the AFW nozzles. Three of the plenums are installed around existing 4-inch diameter nozzles and one plenum is installed around the existing 12-inch diameter nozzle. Each plenum consists of a half cylinder (a pipe cut longitudinally in half) encasing a nozzle, closed at the bottom and open on the top, about 7 feet in length, and attached vertically to the interior of the CST wall. With this modification, the four nozzles have their suction levels inside the CST effectively elevated, thus accommodating the required additional water inventory. In the event of a postulated design-basis seismic event and postulated failure of the Category II piping attached to the nozzles, the CST will drain down to the upper level of the installed plenums and, as a result, will leave the seismically-qualified CST inventory reserved for the AFW pumps at 222,600 usable gallons.

By email dated July 24, 2008 (ADAMS Accession No. ML082540436), the NRC staff requested additional information regarding details of the structural analysis of the CST steel wall performed under 10 CFR 50.59 to seismically qualify the CSTs with the installed plenums for the Hosgri 7.5M earthquake. By letter dated October 1, 2008 (Reference 3), the licensee stated that the CSTs were initially qualified by the similarity of the CSTs and the FWSTs. The FWSTs were seismically qualified for the Hosgri earthquake by finite element analysis using the response spectrum method for the seismic loading, and also considered gravity load, hydrostatic pressure, and impulsive and convective hydrodynamic pressure. The stresses in the FWST steel walls were evaluated in accordance with the licensing basis Code of record, the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section VIII, Division 2, 1974 Edition, "Alternative Rules, Rules for Construction of Pressure Vessels." The licensee evaluated the impact of the addition of the plenums to the CST under 10 CFR 50.59 by superimposing the loads associated with the plenums on the results of the licensing basis seismic analysis of the FWST using the equivalent static method. The plenums are attached to the inside wall with threaded studs inserted in tapped holes in a 1/2-inch-by-3-inch reinforcement plate, which is welded to the 1/4-inch thick tank wall with 3/16-inch fillet welds. The licensee evaluated the stresses in the welds and determined that the minimum safety factor (ratio of capacity to demand) is greater than 7. The licensee also evaluated the effect of the plenums on the base shear and the overturning moments of the tank, and showed that the impact of the addition of the plenums is insignificant. On this basis, the licensee stated that the effect of installing the plenums on the CST wall is minimal. The NRC staff has evaluated the response and concluded that the effect of the plenums on the CSTs will be minimal. The NRC

staff thus finds the response reasonable and acceptable, because it showed a significant safety factor and it was done in accordance with NRC-accepted methodology currently employed in the nuclear industry.

The NRC staff finds the proposed revisions to the TSs 3.7.5 and 3.7.6 and the upgrades to the CSTs acceptable because these revisions and upgrades will ensure that the CSTs are able to provide the entire safety-grade feedwater inventory for AFW system operation, as required by GL 81-21. These revisions will also permit refurbishing of the FWSTs and fire water piping without requiring plant shutdown.

Based on the above, the NRC staff concludes that the modifications are acceptably designed, and that, once modified, each CST will contain an adequate safety-grade volume of water to meet the requirements of the scenario in the licensee's response to GL 81-21.

3.3 Removal of TS Requirements for the FWST

The licensee is requesting to remove all the requirements and references to the FWST from TS 3.7.5 and TS 3.7.6. In order to facilitate this request, the licensee is proposing to revise the required minimum volume and modify both CSTs so that they have the capacities to sufficiently hold the required amount of water to eliminate the need for the supplemental safety-grade water storage in the FWST. The NRC staff reviewed the information provided by the licensee regarding the proposed TS change to delete the requirements for the FWST. To determine if removing the FWST from TS was acceptable, the NRC staff first reviewed the requirements of 10 CFR 50, Appendix R. While Appendix R requires water sources for fire protection, the TS requirements for fire protection systems, including the fire protection function of the FWST, were removed by a previous license amendment in accordance with the guidance of GL 88-12. This function of the FWST is addressed by administrative procedures controlled by the licensee. Therefore, removing the FWST from TS would not conflict with the requirements in 10 CFR 50, Appendix R requirements.

In an email dated September 21, 2008, the NRC staff issued an RAI to the licensee requesting that they verify that no other license conditions or commitments would require keeping the FWST requirement in the TS. In a letter dated November 6, 2008 (Reference 4), the licensee explained that the licensee-controlled Equipment Control Guideline (ECG) contained all the fire suppression license conditions, but there were no revisions to the ECG as part of this proposed TS change. The licensee also stated that the procedure commitment database did not contain any commitments that would require keeping the FWST in the TS.

Based on the above, the NRC staff concludes the removal of the FWST requirements from TS to be acceptable.

3.4 Revision of TS 3.7.6 to Match STS Format

The licensee proposes several TS changes to make TS 3.7.6 consistent with the STS. The revisions entail changing the LCO and Required Actions to reflect "Operability" of the CST based upon maintaining a minimum volume rather than a specific CST level, and likewise, changing the SR to the required volume rather than CST level.

The NRC staff reviewed the proposed changes to TS 3.7.6 using the guidance of SRP Section 16, and verified the changes were consistent with the STS for Westinghouse plants in NUREG-1431. During the review of the amended TS 3.7.6, the NRC staff did not identify any deviations between the proposed TS 3.7.6 and the corresponding TS 3.7.6 in the STS. The proposed changes to TS 3.7.6 conform to the guidance developed by the NRC staff in NUREG-1431, Revision 3, with appropriate modifications for plant-specific considerations. In addition, the licensee will revise the Bases to provide the acceptable CST water level with uncertainties included.

Based on the above, the NRC staff concludes that the proposed TS changes to TS 3.7.6 are acceptable.

3.5 Conclusions

Based on the above, the NRC staff concludes that there is adequate assurance that the regulatory criteria and the plant licensing basis will continue to be satisfied following implementation of the proposed changes. Therefore, the NRC staff concludes the proposed amendment to TS 3.7.5 and TS 3.7.6 are acceptable. The NRC staff notes that these TS changes cannot be implemented at DCCP, Unit 1 until SG replacement and CST modifications are completed.

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. 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 published in the *Federal Register* on July 29, 2008 (73 FR 43956). 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.

7.0 REFERENCES

1. James R. Becker, Pacific Gas and Electric Company, letter DCL-08-023, to U.S. Nuclear Regulatory Commission, "License Amendment Request 08-02, Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" April 3, 2008 (ADAMS Accession No. ML081010207).
2. James R. Becker, Pacific Gas and Electric Company, letter DCL-08-051, to U.S. Nuclear Regulatory Commission, "Supplement to License Amendment Request 08-02, Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" June 20, 2008 (ADAMS Accession No. ML081820180).
3. James R. Becker, Pacific Gas and Electric Company, letter DCL-08-081, to U.S. Nuclear Regulatory Commission, "Supplement to License Amendment Request 08-02, Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" October 1, 2008 (ADAMS Accession No. ML082830134).
4. James R. Becker, Pacific Gas and Electric Company, letter DCL-08-093, to U.S. Nuclear Regulatory Commission, "Response to NRC Request for Additional Information Regarding License Amendment Request 08-02, "Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank'",," November 6, 2008 (ADAMS Accession No. ML083260564).
5. James R. Becker, Pacific Gas and Electric Company, letter DCL-08-106, to U.S. Nuclear Regulatory Commission, "Response to NRC Request for Additional Information Regarding License Amendment Request 08-02, "Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank'",," December 16, 2008 (ADAMS Accession No. ML083590344).
6. U.S. Nuclear Regulatory Commission, NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," Volume 1, Revision 3, June 2004 (ADAMS Accession No. ML041830612).
7. U.S. Nuclear Regulatory Commission, NUREG-0800, "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants," March 2007 (ADAMS Package Accession No. ML070660036).
8. U.S. Nuclear Regulatory Commission, "Seismic Design Classification," Regulatory Guide 1.29, Revision 4, March 2007 (ADAMS Accession No. ML070310052).
9. U.S. Nuclear Regulatory Commission, "Natural Circulation Cooldown," Generic Letter (GL) 81-21, May 5, 1981 (ADAMS Accession No. ML031080586).

10. U.S. Nuclear Regulatory Commission, "Removal of Fire Protection Requirements from Technical Specifications," Generic Letter (GL) 88-12, August 2, 1988 (ADAMS Accession No. ML031150471).

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Date: March 30, 2009

March 30, 2009

Mr. John T. Conway
Site Vice President and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 3, Mail Code 104/6/601
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: CHANGES TO TECHNICAL SPECIFICATION 3.7.5, AUXILIARY FEEDWATER SYSTEM AND TECHNICAL SPECIFICATION 3.7.6, CONDENSATE STORAGE TANK AND FIRE WATER STORAGE TANK (TAC NOS. MD8471 AND MD8472)

Dear Mr. Conway:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 204 to Facility Operating License No. DPR-80 and Amendment No. 205 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 (TSs) in response to your application dated April 3, 2008, as supplemented by letters dated June 20, October 1, November 6, and December 16, 2008.

The amendments revise TS 3.7.5, "Auxiliary Feedwater (AFW) System," to remove Surveillance Requirement (SR) 3.7.5.6 and revise TS 3.7.6, "Condensate Storage Tank (CST) and Fire Water Storage Tank (FWST)," to remove the FWST level requirements, revise the CST level requirements, and revise TS 3.7.6 to be consistent with the NUREG-1431 Standard Technical Specifications (STS).

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/

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

Docket Nos. 50-275 and 50-323

Enclosures:

1. Amendment No. 204 to DPR-80
2. Amendment No. 205 to DPR-82
3. Safety Evaluation

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ADAMS Accession No: **ML090630808**

*SE memo dated

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