July 15, 2003

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

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NO. 1 (TAC NO. MB8081) AND UNIT NO. 2 (TAC NO. MB8196) – ISSUANCE OF AMENDMENT RE: REVISION OF TECHNICAL SPECIFICATION (TS) SECTION 3.5.2 - ONE-TIME INCREASE IN CHARGING PUMP COMPLETION TIME DURING CYCLE 12 FROM 72 HOURS TO 7 DAYS FOR UNIT 1 AND DELETION OF AN EXPIRED REQUIREMENT FOR UNIT 2

Dear Mr. Rueger:

The U. S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 159 to Facility Operating License No. DPR-80 and Amendment No. 160 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 (TS) in response to your application dated February 28, 2003, as supplemented by letter dated June 26, 2003.

The amendments revise TS Section 3.5.2, "ECCS - Operating," Action A to allow a one-time increase in the allowed outage time for centrifugal charging pump (CCP) 1-1, for the purpose of seal replacement, during Unit 1's Cycle 12 from 72 hours to 7 days. Additionally, the amendments delete a similar one-time TS change for Unit 2's CCP 2-1, that has expired.

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. 159 to DPR-80
2. Amendment No. 160 to DPR-82
3. Safety Evaluation

cc w/encls: See next page

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. 159 to DPR-80
2. Amendment No. 160 to DPR-82
3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:
PUBLIC
PDIV-2 Reading
RidsNrrDlpmLpdiv (HBerkow)
RidsNrrPMDJaffe
RidsNrrPMGShukla
RidsNrrLAEPeyton
RidsOgcRp
RidsAcrsAcnwMailCenter
RidsRgn4MailCenter (BJones)
G. Hill (4)
WBeckner
GKelly

See Previous Concurrence*

ACCESSION NO.: ML031920491 **NRR-058**

OFFICE	PDIV-1/PM	PDIV-2/LA	SPSB	OGC	PDIV-2/SC
NAME	DJaffe:sab	EPeyton	MRubin	SCole	SDembek
DATE	6/26/03	6/26/03	6/30/03	7/9/03	7/11/03

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML031920491.wpd
OFFICIAL RECORD COPY

Diablo Canyon Power Plant, Units 1 and 2

cc:

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

Mr. Pete Wagner
Sierra Club California
2650 Maple Avenue
Morro Bay, California 93442

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 Kinosian
California Public Utilities Commission
505 Van Ness, Room 4102
San Francisco, CA 94102

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 & Pavillion
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Richard F. Locke, Esq.
Pacific Gas & Electric Company
P.O. Box 7442
San Francisco, CA 94120

Mr. David H. Oatley, Vice President
and General Manager
Diablo Canyon Power Plant
P.O. Box 56
Avila Beach, CA 93424

City Editor
The Tribune
3825 South Higuera Street
P.O. Box 112
San Luis Obispo, CA 93406-0112

Mr. Ed Bailey, Radiation Program Director
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732 (MS 178)
Sacramento, CA 94234-7320

Mr. James D. Boyd, Commissioner
California Energy Commission
1516 Ninth Street (MS 31)
Sacramento, CA 95814

Mr. James R. Becker, Vice President
Diablo Canyon Operations
and Station Director
Diablo Canyon Power Plant
P.O. Box 3
Avila Beach, CA 93424

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-275

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 159
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 February 28, 2003, as supplemented by letter dated June 26, 2003, 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. 159, 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: July 15, 2003

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

DOCKET NO. 50-323

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160
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 February 28, 2003, as supplemented by letter dated June 26, 2003, 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. 160, 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: July 15, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 159

TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 160

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	INSERT
3.5-3	3.5-3

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

---NOTE---
In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valve(s) for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable. <u>AND</u> At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	A.1 Restore trains(s) to OPERABLE status	--------NOTE-------- The Completion Time may be extended to 7 days for Unit 1 cycle 12 for centrifugal charging pump 1-1 seal replacement ------------------------- 72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	6 hours 12 hours

<u>SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION</u>

<u>RELATED TO AMENDMENT NO. 159 TO FACILITY OPERATING LICENSE NO. DPR-80</u>

<u>AND AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. DPR-82</u>

<u>PACIFIC GAS AND ELECTRIC COMPANY</u>

<u>DIABLO CANYON POWER PLANT, UNITS 1 AND 2</u>

<u>DOCKET NOS. 50-275 AND 50-323</u>

1.0 INTRODUCTION

By application dated February 28, 2003, as supplemented by letter dated June 26, 2003, Pacific Gas and Electric Company (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 proposed change would revise TS Section 3.5.2, "ECCS - Operating," Action A to allow a one-time increase in the allowed outage time (AOT) for centrifugal charging pump (CCP) 1-1, for the purpose of seal replacement, during Unit 1's Cycle 12 from 72 hours to 7 days. Additionally, this License Amendment Request (LAR) removes a similar one-time TS change for Unit 2's CCP 2-1 that has expired.

The supplemental letter dated June 26, 2003, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on April 29, 2003 (68 FR 22753).

2.0 REGULATORY EVALUATION

The licensee identified the applicable regulatory requirements in Section 5.2 of its February 28, 2003 letter. The regulatory requirements on which the staff based its acceptance are found in Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Technical Specifications," as revised in July 1995, and as clarified by the NRC's final policy statement on TS improvements dated July 22, 1993, which addresses the use of probabilistic safety assessment (PSA).

3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment which are described in Sections 4.0 and 5.2 of the licensee's February 28, 2003, submittal. The detailed evaluation below will support the conclusion 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.

3.1 Background

Since the mid-1980s, the NRC has been reviewing and granting improvements to TS that are based, at least in part, on probabilistic risk assessment (PRA) insights. In its final policy statement on TS improvements of July 22, 1993, the NRC stated that it...

> ...expects that licensees, in preparing their Technical Specification related submittals, will utilize any plant-specific PSA (probabilistic safety assessment)[1] or risk survey and any available literature on risk insights and PSAs. Similarly, the NRC staff will also employ risk insights and PSAs in evaluating Technical Specifications related submittals. Further, as a part of the Commission's ongoing program of improving Technical Specifications, it will continue to consider methods to make better use of risk and reliability information for defining future generic Technical Specification requirements.

The NRC reiterated this point when it issued the revision to 10 CFR 50.36, "Technical Specifications," in July 1995 (60 FR 36953). In August 1995, the NRC adopted a final policy statement on the use of PSA methods in nuclear regulatory activities that improve safety decision making and regulatory efficiency. The PRA policy statement included the following points:

1. The use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

2. PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements.

3. PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.

With regard to the February 28, 2003, application, the licensee is seeking an extension of the time during which CCP 1-1 may be inoperable (referred to in the TS as the "Completion Time") for the purpose of replacing the pump seals on CCP 1-1 and supported this request with a PSA. TS 3.5.2, Required Action A.1, for one or more emergency core cooling system (ECCS) trains inoperable (the CCPs are a part of the ECCS trains) and at least 100 percent of the ECCS flow equivalent to a single operable ECCS train available, requires that the inoperable train be restored to operable status within 72 hours. The completion time is modified by a note which

---

[1] PSA and PRA are used interchangeably herein.

states, "The Completion Time may be extended to 7 days for Unit 2 Cycle 10 for repair or replacement of centrifugal charging pump 2-1." This note (which has expired for Unit 2) would be deleted and a new note would state, "The Completion Time may be extended to 7 days for Unit 1 Cycle 12 for centrifugal charging pump 1-1 seal replacement."

On January 30, 2003, during functional testing of CCP 1-1, greater than normal leakage, as high as 160 drops per minute (dpm), was observed coming from the outboard mechanical seal. Several additional measurements were taken using a graduated cylinder with the pump running and stopped. With the pump running, the leakage was consistent at about 22 to 25 cubic centimeters per minute (cc/min). With the pump stopped, leakage varied from 61 to 111 cc/min. One cc/min is equivalent to approximately 20 dpm.

Over the next several days, seal leakage returned to normal (about 1-2 dpm with the pump running). On February 13, 2003, seal leakage increased again to about 35 cc/min (700 dpm). It has subsequently decreased to about 3 cc/min. Based on this erratic history, it appears seal replacement will be needed soon, and before the next Unit 1 refueling outage scheduled for March 2004.

3.2 Review of the Proposed Completion Time Increase

The staff evaluated the licensee's proposed amendment to the TS using traditional engineering analysis, PRA methods, and a review of operating experience. The staff's traditional analysis evaluated the capabilities of the plant to mitigate design basis events with one CCP inoperable. The staff then used insights derived from the use of PRA methods to determine the risk-significance of the proposed changes. The results of these evaluations were used in combination by the staff to determine the safety impact of extending the completion times for one inoperable CCP.

3.3 Justification for Proposed Change to CCP 1-1 Completion Time from 72 Hours to 7 Days

With one CCP inoperable, the current completion time to restore operability is 72 hours, or be in hot standby within the next 6 hours and in hot shutdown within the following 12 hours. The licensee has stated that increasing the completion time from 72 hours to 7 days would provide adequate time for replacement of the CCP 1-1 pump seals. Increasing the completion time is consistent with recommendations of NUREG-1024, "Technical Specifications - Enhancing the Safety Impact." NUREG-1024 states:

> Allowable outage times [AOTs] that are too short will subject the plant to unnecessary trips, transients, and fatigue cycling. Outage times that are too short also may result in less thorough repair and post-repair testing before equipment is returned to service."

Maintaining the unit at power during the replacement of the CCP 1-1 pump seals provides the additional safety benefit of averting transitional risk associated with shutting the unit down.

3.4 Traditional Engineering Evaluation

The function of the ECCS is to provide core cooling and negative reactivity to ensure that the reactor core is protected after a design-basis accident.

The ECCS consists of three separate subsystems: (1) centrifugal charging (high head), (2) safety injection (SI) (intermediate head), and (3) residual heat removal (RHR) (low head). Each subsystem consists of two 100 percent capacity trains that are interconnected and redundant such that either train is capable of supplying 100 percent of the flow required to mitigate the accident consequences. Each ECCS train consists of a CCP, SI pump, RHR pump, piping, valves, and heat exchangers. The ECCS pumps are normally in a standby mode, although they may sometimes be used during normal operation. For example, the CCPs are used for normal charging. In Modes 1, 2, and 3, two independent (and redundant) ECCS trains are required to protect against a single failure affecting either train.

For high-head safety injection, both CCPs start automatically on an SI signal. Two CCPs, each with 100 percent flow capacity, are available to operate during the injection and recirculation phase following an accident to ensure that the safety injection function is fulfilled even assuming a single active failure. On receipt of an SI signal, CCP suction flow is automatically transferred from the volume control tank (VCT) to the refueling water storage tank (RWST). The normal charging path is automatically isolated on an SI signal and the ECCS injection path valves are automatically opened to provide flow to the reactor coolant system (RCS) cold legs. When the RWST water inventory is depleted to approximately 33 percent, the RHR pumps are automatically shut off, and the ECCS suction is manually transferred to the containment recirculation sump to place the system in the recirculation mode of operation. During the recirculation mode of operation, the RHR pumps provide suction to the CCPs and SI pumps. The recirculation mode of operation consists of a cold leg recirculation phase in which flow is supplied to the RCS cold legs and a hot leg recirculation phase in which flow is supplied to the RCS hot legs.

The ECCS is credited to provide core cooling and negative reactivity after any of the following accidents: loss-of-coolant accident (LOCA), non-isolable coolant leakage greater than the capability of the normal charging system; rod ejection accident; loss of secondary coolant accident, including uncontrolled steam release or loss of feedwater; and steam generator tube rupture (SGTR).

The TS Limiting Condition for Operation (LCO) 3.5.2 requires two independent (and redundant) ECCS trains to ensure that sufficient ECCS flow is available to meet the design basis analysis assumptions for the above accidents, assuming a single failure affecting either train. TS 3.5.2, Action A.1 states that with one or more trains inoperable and at least 100 percent of the ECCS flow equivalent to a single operable ECCS train available, the inoperable components must be returned to operable status within 72 hours. The 72-hour completion time is based on a generic NRC reliability evaluation that has shown the impact of having one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours. During the 72-hour completion time, 100 percent of the ECCS flow required to mitigate accidents can be provided absent the occurrence of particular single failures. A single failure is not required to be postulated during the completion time.

A completion time of 72 hours is usually sufficient to perform necessary preventive or corrective maintenance required on the CCPs. However, replacement of the CCP 1-1 pump seals is expected to require up to 7 days. Since the CCP 1-1 seal replacement is expected to exceed one half of the TS completion time, the replacement activities will be planned by the licensee to be worked on a 24-hour schedule until completion per DCPP Administrative Procedure AD7.1D4, "On-line Maintenance Scheduling." During the 7-day period, 100 percent of the ECCS flow required to mitigate accidents can be provided if no additional single failure occurs. With no single failure, there are no situations in which entry into a 7-day completion time, due to an inoperable CCP 1-1, would result in failure to meet an intended safety function. In addition, the licensee has committed to institute compensatory actions during the replacement activities in order to minimize the increase in risk during the 7-day period when CCP 1-1 is inoperable.

3.5 Probabilistic Risk Assessment Evaluation

The NRC staff used a three-tiered approach to evaluate the risk associated with the proposed TS changes. The first tier evaluated the PRA model and the impact of the completion time extension on plant operational risk. The second tier addressed the need to preclude potentially high risk configurations, should additional equipment outages occur during the time when CCP 1-1 is out-of-service (OOS). The third tier evaluated the licensee's configuration risk management program to ensure that the applicable plant configuration will be appropriately assessed from a risk perspective before entering into or during the proposed completion times. Each tier and the associated findings are discussed below.

3.5.1 Tier 1 Evaluation

The licensee used traditional PRA methodology to evaluate the requested AOT extension for CCP 1-1. The Tier 1 NRC staff review of the licensee's PRA involved three aspects: (1) evaluation of the PRA model and application to the proposed AOT extension, (2) evaluation of PRA results and insights stemming from the application, and (3) discussion of the quality of the PRA.

(1) Evaluation of PRA Model and Application to the AOT Extension

The NRC staff's review focused on the capability of the licensee's PRA model to analyze the risk stemming from the proposed AOT changes for CCP 1-1, and did not involve an in-depth review of the licensee's PRA. The NRC previously performed a review of the licensee's individual plant examination (IPE) submittal. The current review was based on the staff's initial screening process, where the staff examined the licensee's internal events PRA results; the updates to the PRA by the licensee and peer reviews of the updates; and recent operational experience regarding availability and reliability of centrifugal charging pumps. The staff concludes that the licensee's PRA results are reasonable, and the scope and depth of the PRA analysis support an evaluation of the CCP 1-1 AOT extension. In its June 26, 2003, submittal the licensee stated that recent data for CCP reliability and availability did not indicate any adverse trends.

The licensee exercised its updated PRA to determine the effect of extending the CCP 1-1 completion time from 72 hours to 7 days. The DCPP PRA is a full-scope, level 2 PRA that evaluates the frequency of experiencing reactor and plant damage as a result of both internal and external initiating events. The NRC review and acceptance of the original PRA evaluation, DCPRA-1988, is summarized in the "safety evaluation report related to the operation of Diablo Canyon Nuclear Power Plant, Units 1 and 2," Supplement No. 34 (NUREG-0675, June 1991). Much of the review of DCPRA-1988 was performed by Brookhaven National Laboratory (BNL), and the review is documented in NUREG/CR-5726, published in August 1994. As part of the licensee's living PRA program, the DCPP PRA was updated in 1990, 1991, 1993, 1995, 1997, 2000, and 2001. Peer certification of the DCPP PRA using the Westinghouse Owners Group (WOG) peer review certification guidelines was performed in May 2000, which provided a comprehensive assessment of the strengths and limitations of each element of the PRA. The licensee has reviewed the outstanding Peer Review comments and has determined that there are no comments that would have a noticeable effect on the results of the PRA analysis, and in particular finds that its conclusions about the AOT extension would remain the same. Subsequent to the peer review, the licensee made several updates, the most significant of which were (1) revised the HRA as a result of the Peer Certification, (2) added the 500kV switchyard to the model and took credit for the ability to feed more than one vital bus from the Class 1 EDGs, and (3) added anticipated transients without scram mitigation system actuation circuitry (AMSAC) to the model as a diverse start of AFW pumps and a diverse turbine trip.

The PRA calculations performed by the licensee did include internal events including flooding, and seismic events. The calculations did not include fire events. The fire PRA was reviewed by the licensee and it was determined that a single CCP out of service would not noticeably affect the resulting PRA. It should be noted that CCP 1-1 and CCP 1-2 (the redundant CCP) are located in the same fire area. The fire scenario that is analyzed as a fire initiator in the fire PRA is the loss of both CCPs due to the fire. Because both of the CCPs are in the same fire area, the licensee credits the positive displacement pump, which is in a different fire area and is not modeled in the fire PRA, for the Appendix R safe shutdown requirements.

(2) Evaluation of PRA Results and Insights

The PRA model used by the licensee for this AOT extension request was DCC0, which was completed in March 2001. Evaluation of the PRA model resulted in the following core damage frequencies: internal events - $1x10^{-5}$, seismic events - $3x10^{-5}$, fire events - $1x10^{-5}$, with a total CDF of $5.5x10^{-5}$ per year.

Consistent with Regulatory Guide (RG) 1.177, "An Approach for Plant Specific, Risk Informed Decision Making: Technical Specifications," the licensee provided the incremental conditional core damage probability (ICCDP) and the incremental conditional large early release probability (ICLERP). The ICCDP, used to evaluate the incremental probability of a core damage event over a period of time equal to the CT for the proposed change is $3.5x10^{-8}$, which is less than the $5.0x10^{-7}$ guideline in RG 1.177 used to identify a "small" risk impact for a single AOT change.

The ICLERP used to evaluate the incremental probability of a large early release event over a period of time equal to the extended CT is $1.10x10^{-12}$, which is less than the $5.0x10^{-8}$ guideline in RG 1.177 used to identify a "small" risk impact for a single AOT change.

The calculated values for ICCDP and ICLERP demonstrate that the proposed CCP 1-1 completion time change has only a small quantitative impact on plant risk, as they are less than the RG acceptance criteria. In accordance with NRC guidelines stated in RG 1.174 and RG 1.177, having the CCP 1-1 OOS for 7 days is a low risk-significant configuration.

(3) Quality of the Diablo Canyon PRA

The NRC evaluation of the original Diablo Canyon PRA submittal, performed primarily by BNL and completed by BNL in 1993, found the PRA was beyond the state-of-the-art of the time. The licensee indicated in its February 2003 submittal that a peer review by the WOG in May 2000 stated that the licensee has maintained a high quality PRA that is appropriate for risk-informed submittals.

PG&E Nuclear Power Generation Procedure CF3.ID15 is the governing procedure for PRA calculations. Within this procedure are requirements to conduct independent verification of calculations. The application of this process was reviewed by the WOG peer review team in May 2000. The review found the independent verification process met the standards for a risk-informed submittal.

In a letter dated June 27, 1994, the licensee submitted to NRC the individual plant examination of external events (IPEEE) for the DCPP. The IPEEE submittal provides insights from an extensive evaluation of seismic events. The NRC staff reviewed the DCPP IPEEE and found it capable of detecting vulnerabilities to external event severe accidents.

The NRC staff finds that a small incremental increase in core damage frequency estimated for the change in AOT from 72 hours to 7 days is consistent with the credit taken for the system in the PRA modeling, and that the extensive licensee review and updating of the PRA models provide reasonable assurance that the models appropriately reflect the equipment and procedural characteristics at the plant.

3.5.2 Tier 2 Evaluation

The licensee states there is reasonable assurance that risk-significant plant equipment configurations will not occur when CCP 1-1 is OOS consistent with the proposed TS change. Increases in risk posed by potential combinations of equipment OOS will be managed under the Configuration Risk Monitoring Program (CRMP).

The second tier addressed the need to preclude potentially high risk configurations by identifying the need for any additional constraints or compensatory actions that, if implemented, would avoid or reduce the probability of a risk-significant configuration during the time when one CCP is OOS. The licensee identified and committed to take the following actions once the license amendment is granted for the CCP 1-1 repair:

- Before beginning work on CCP 1-1, the risk will be assessed per plant procedures as required by 10 CFR 50.65(a)(4) of the Maintenance Rule.

- CCP 1-2 and its system alignment will be verified operable and available to provide injection flow to the RCS in the event of an SI signal.
- No elective maintenance or surveillance testing will be performed which disables the ECCS equipment (except CCP 1-1). This will maximize the availability of ECCS flow to provide the safety injection function.
- The emergency diesel generators (EDGs) will be verified to be operable. Additionally, no elective maintenance or testing will be performed on the EDGs, the 230kV, or 500kV systems. This will maximize the availability of onsite AC power should offsite power be lost and ensure that power is available to all ECCS equipment.
- The risk of performing elective maintenance or surveillance testing on other risk-significant systems, structures, and components will be assessed and managed for the current plant state in accordance with plant procedures.
- Very high-risk plant evolutions as described in plant risk assessment procedures will be avoided.
- Elective load changes will not be performed.

These compensatory actions are being taken by the licensee to help assure that the CCP 1-2 pump and other ECCS equipment are operable and capable of being powered, and to minimize the possibility that the ECCS equipment will be required. The actions help decrease the possibility that risk-significant equipment is lost and minimize the overall plant risk during the CCP 1-1 outage. With these compensatory actions in place, the licensee has stated that 100 percent of the ECCS flow required to mitigate accidents can be provided if no single failure were assumed.

3.5.3 Tier 3 Evaluation

Tier 3 is the development of a proceduralized program to ensure that the risk impact of out-of-service equipment is appropriately evaluated prior to performing a maintenance activity. A viable program would be one that is able to uncover risk-significant plant equipment outage configurations in a timely manner during normal plant operation. The DCPP plant procedures include requirements to perform a risk calculation and safety function degradation evaluation to assess the effect of components that are taken OOS. The licensee indicated that the governing CRMP procedure, AD7.DC6, "On-Line Maintenance Risk Management," addresses risk management practices in the maintenance planning and maintenance execution phases for Modes 1 through 4. This AOT extension is only a one-time extension, for CCP 1-1, during Cycle 12.

Therefore, in conclusion, the staff finds that the AOT for Unit 1’s CCP 1-1 may be extended to 7 days on a one-time basis with a negligible effect on risk. In addition, the existing one-time AOT extension for Unit 2’s CCP 2-1, for Cycle 10, may be deleted since it has expired.

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 (68 FR 22753). 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.

Principal Contributor: Glenn Kelly

Date: July 15, 2003