



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

April 30, 2018

Mr. James M. Welsch
Vice President, Nuclear Generation
and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Nuclear Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

**SUBJECT: DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2 - ISSUANCE
OF AMENDMENTS RE: REVISION TO TECHNICAL SPECIFICATIONS TO
ADOPT TECHNICAL SPECIFICATIONS TASK FORCE (TSTF) CHANGE
TRAVELER TSTF-547, REVISION 1 (EPID L-2017-LLA-0309)**

Dear Mr. Welsch:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 232 to Facility Operating License No. DPR-80 and Amendment No. 234 to Facility Operating License No. DPR-82 for the Diablo Canyon Nuclear Power Plant (DCPP), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 28, 2017.

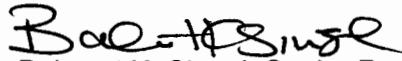
The amendments revise the TSs for DCPP, Units 1 and 2, to adopt Technical Specifications Task Force (TSTF) Change Traveler TSTF-547, Revision 1, "Clarification of Rod Position Requirements." Specifically the amendments revise requirements on control and shutdown rods and rod and bank position indication consistent with NRC-approved TSTF-547.

J. Welsch

- 2 -

A copy of the related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,



Balwant K. Singal, Senior 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. 232 to DPR-80
2. Amendment No. 234 to DPR-82
3. Safety Evaluation

cc: Listserv



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

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-275

DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 232
License No. DPR-80

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Pacific Gas and Electric Company (the licensee), dated September 28, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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. 232 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert J. Pascarelli, 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: April 30, 2018



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 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 234
License No. DPR-82

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Pacific Gas and Electric Company (the licensee), dated September 28, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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. 234, 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 120 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert J. Pascarelli, 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: April 30, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 232

TO FACILITY OPERATING LICENSE NO. DPR-80

AND LICENSE AMENDMENT NO. 234 TO FACILITY OPERATING LICENSE NO. DPR-82

DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2

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 No. DPR-80

REMOVE

INSERT

-3-

-3-

Facility Operating License No. DPR-82

REMOVE

INSERT

-3-

-3-

Technical Specifications

REMOVE

INSERT

3.1-7

3.1-7

3.1-8

3.1-8

3.1-9

3.1-9

3.1-10

3.1-10

3.1-10a

3.1-11

3.1-11

3.1-11a

3.1-13

3.1-13

3.1-13a

3.1-14

3.1-14

3.1-15

3.1-15

- (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. 232 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. 234, 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.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE.

AND

Individual indicated rod positions shall be within 12 steps of their group step counter demand position.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more rod(s) inoperable.	A.1.1 Verify SDM to be within the limits provided in the COLR.	1 hour
	<u>OR</u>	
	A.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.2 Be in MODE 3.	6 hours
B. One rod not within alignment limits.	B.1.1 Verify SDM to be within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	B.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Reduce THERMAL POWER to \leq 75% RTP.	2 hours
	<u>AND</u>	
	B.3 Verify SDM to be within the limits specified in the COLR.	Once per 12 hours
	<u>AND</u>	
	B.4 Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.2.1.	72 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours
	D. More than one rod not within alignment limit.	D.1.1 Verify SDM to be within the limits provided in the COLR.
<u>OR</u>		
D.1.2 Initiate boration to restore required SDM to within limit.		1 hour
<u>AND</u>		
D.2 Be in MODE 3.	6 hours	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	<p>-----NOTE----- Not required to be performed for rods associated with inoperable rod position indicator or demand position indicator.</p> <p>----- Verify position of individual rods within alignment limit.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.2	Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core ≥ 10 steps in either direction.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.3	<p>Verify rod drop time of each rod, from the fully withdrawn position, is ≤ 2.7 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with:</p> <p>a. $T_{avg} \geq 500$ °F; and</p> <p>b. All reactor coolant pumps operating.</p>	Prior to reactor criticality after each removal of the reactor head

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

LCO 3.1.5 Each shutdown bank shall be within insertion limits specified in the COLR.

-----NOTE-----
Not applicable to shutdown banks inserted while performing SR 3.1.4.2.

APPLICABILITY: MODE 1, MODE 2 with any control bank not fully inserted.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One shutdown bank inserted \leq 16 steps beyond the insertion limits specified in the COLR.	A.1 Verify all control banks are within the insertion limits specified in the COLR.	1 hour
	<u>AND</u>	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.3 Restore the shutdown bank to within the insertion limits specified in the COLR.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more shutdown banks not within limits for reasons other than Condition A.	B.1.1 Verify SDM to be within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	B.1.2 Initiate boration to restore SDM to within limit.	1 hour
C. Required Action and associated Completion Time not met.	<u>AND</u>	
	B.2 Restore shutdown banks to within limits.	2 hours
	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.5.1 Verify each shutdown bank is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

LCO 3.1.6 Control banks shall be within the insertion, sequence, and overlap limits specified in the COLR.

-----NOTE-----
Not applicable to control banks inserted while performing SR 3.1.4.2.

APPLICABILITY: MODES 1, MODE 2 with $k_{eff} \geq 1.0$.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control bank A, B, or C inserted \leq 16 steps beyond the insertion, sequence, or overlap limits specified in the COLR.	A.1 Verify all shutdown banks are within the insertion limits specified in the COLR.	1 hour
	<u>AND</u>	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.3 Restore the control bank to within the insertion, sequence, and overlap limits specified in the COLR.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Control bank insertion limits not met for reasons other than Condition A.</p>	<p>B.1.1 Verify SDM to be within the limits specified in the COLR.</p>	1 hour
	<p><u>OR</u></p>	
	<p>B.1.2 Initiate boration to restore SDM to within limit.</p>	1 hour
	<p><u>AND</u></p>	
	<p>B.2 Restore control bank(s) to within limits.</p>	2 hours
<p>C. Control bank sequence or overlap limits not met for reasons other than Condition A.</p>	<p>C.1.1 Verify SDM to be within the limits specified in the COLR.</p>	1 hour
	<p><u>OR</u></p>	
	<p>C.1.2 Initiate boration to restore SDM to within limit.</p>	1 hour
	<p><u>AND</u></p>	
	<p>C.2 Restore control bank sequence and overlap to within limits.</p>	2 hours
<p>D. Required Action and associated Completion Time not met.</p>	<p>D.1 Be in MODE 3.</p>	6 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Digital Rod Position Indication (DRPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each inoperable DRPI and each demand position indicator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One DRPI per group inoperable in one or more groups.</p>	<p>A.1 Verify the position of the rod with inoperable DRPI indirectly by using core power distribution measurement information.</p>	<p>Once per 8 hours</p>
	<p><u>OR</u></p> <p>A.2.1 Verify the position of the rod with inoperable DRPI indirectly by using core power distribution measurement information.</p> <p><u>AND</u></p>	<p>8 hours</p> <p><u>AND</u></p> <p>Once per 31 EFPD thereafter</p> <p><u>AND</u></p> <p>8 hours after discovery of each unintended rod movement</p> <p><u>AND</u></p> <p>(continued)</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2.2 Restore inoperable DRPI to OPERABLE status.</p> <p><u>OR</u></p> <p>A.3 Reduce THERMAL POWER to ≤ 50% RTP.</p>	<p>8 hours after each movement of rod with inoperable DRPI > 12 steps</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>8 hours after reaching RTP</p> <p>Prior to entering MODE 2 from MODE 3</p> <p>8 hours</p>
B. More than one DRPI per group inoperable in one or more groups.	<p>B.1 Place the control rods under manual control</p> <p><u>AND</u></p> <p>B.2 Restore inoperable DRPIs to OPERABLE status such that a maximum of one DRPI per group is inoperable.</p>	<p>Immediately</p> <p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more DRPI inoperable in one or more groups and associated rod has been moved > 24 steps in one direction since the last determination of the rod's position.	C.1 Verify the position of the rods with inoperable DRPIs indirectly by using core power distribution measurement information. OR C.2 Reduce THERMAL POWER to \leq 50% RTP.	4 hours 8 hours
D. One or more demand position indicators per bank inoperable in one or more banks.	D.1.1 Verify by administrative means all DRPIs for the affected banks are OPERABLE. AND D.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are \leq 12 steps apart. OR D.2 Reduce THERMAL POWER to \leq 50% RTP	Once per 8 hours Once per 8 hours 8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.1.7.1</p> <p>-----NOTE----- Not required to be met for DRPIs associated with rods that do not meet LCO 3.1.4. -----</p> <p>Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.</p>	<p>Once prior to criticality after each removal of the reactor vessel head.</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 232 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 234 TO FACILITY OPERATING LICENSE NO. DPR-82
PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2
DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By application dated September 28, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17271A090), Pacific Gas and Electric Company (PG&E, the licensee) requested changes to the Technical Specifications (TSs) for Diablo Canyon Nuclear Power Plant, Units 1 and 2 (DCPP). Specifically, the application requests adoption of Technical Specifications Task Force (TSTF) Change Traveler TSTF-547, Revision 1, "Clarification of Rod Position Requirements."

By letter dated March 6, 2014 (ADAMS Accession No. ML14065A582), the TSTF submitted Traveler TSTF-547, Revision 0, to the U.S. Nuclear Regulatory Commission (NRC, the Commission) for review. By letter dated December 31, 2015 (ADAMS Accession No. ML15365A610), the TSTF submitted Revision 1 to Traveler TSTF-547. Traveler TSTF-547 proposes changes to Volumes 1 and 2 (Specifications and Bases) of NUREG-1431, Revision 4, "Standard Technical Specifications: Westinghouse Plants," dated April 2012 (ADAMS Accession Nos. ML12100A222 and ML12100A228, respectively). By letter dated March 4, 2016 (ADAMS Accession No. ML16012A130), the NRC staff issued the final safety evaluation (SE) for TSTF-547, Revision 1 (ADAMS Accession No. ML15328A350).

The proposed changes would revise the TSs to provide time to correct rod movement failures that do not affect operability, provide an alternative to frequent verification of rod position using indirect means, and allow time for thermal equilibrium of analog rod position indication (RPI). The proposed changes would also align requirements of TS 3.1.4, "Rod Group Alignment Limits," and TS 3.1.7, "Rod Position Indication"; eliminate an unnecessary Required Action (RA) from TS 3.1.7; and make some editorial improvements to TSs 3.1.4, 3.1.5, "Shutdown Bank Insertion Limits," 3.1.6, "Control Bank Insertion Limits," and 3.1.7.

2.0 REGULATORY EVALUATION

2.1 Description of Rod Cluster Control Assemblies

The rod cluster control assemblies (RCCA), or rods, are moved by their control rod drive mechanisms (CRDMs). Each CRDM moves its RCCA one step (approximately 5/8 inch) at a time, but at varying rates (steps per minute) depending on the signal output from the Rod Control System. The RCCAs are divided among control banks and shutdown banks. Each bank may be further subdivided into two groups to provide for precise reactivity control. A group consists of two or more RCCAs that are electrically paralleled to step simultaneously. If a bank of RCCAs consists of two groups, the groups are moved in a staggered fashion, but always within one step of each other. All units have four control banks and at least two shutdown banks.

The shutdown banks are maintained either in the fully inserted or fully withdrawn position. The control banks are moved in an overlap pattern, using the following withdrawal sequence: when control bank A reaches a predetermined height in the core, control bank B begins to move out with control bank A. Control bank A stops at the position of maximum withdrawal, and control bank B continues to move out. When control bank B reaches a predetermined height, control bank C begins to move out with control bank B. This sequence continues until control banks A, B, and C, are at the fully withdrawn position, and control bank D is approximately halfway withdrawn. The insertion sequence is the opposite of the withdrawal sequence. The control rods are arranged in a radially symmetric pattern, so that control bank motion does not introduce radial asymmetries in the core power distributions.

The control banks are used for precise reactivity control of the reactor. The positions of the control banks are normally automatically controlled by the Rod Control System, but they can also be manually controlled. They are capable of adding negative reactivity very quickly (compared to borating). The control banks must be maintained above designed insertion limits and are typically near the fully withdrawn position during normal full power operations.

The axial position of shutdown rods and control rods is indicated by two separate and independent systems, which are the Bank Demand Position Indication System (commonly called group step counters) and the RPI System. The Bank Demand Position Indication System counts the pulses from the rod control system that moves the rods. There is one step counter for each group of rods. Individual rods in a group all receive the same signal to move and should, therefore, all be at the same position indicated by the group step counter for that group. The Bank Demand Position Indication System is considered relatively precise (± 1 step or $\pm 5/8$ inch). If a rod does not move one step for each demand pulse, the step counter will still count the pulse but incorrectly reflect the position of the rod. However, the RPI System provides a more accurate indication of actual rod position, but at a lower precision than the step counters. This system is based on inductive analog signals from a series of coils spaced along a hollow tube. To increase the reliability of the system, the inductive coils are connected alternately to data system A or B. Thus, if one data system fails, the RPI will indicate rod position with half accuracy. The RPI System is capable of monitoring rod position within at least ± 12 steps with either full accuracy or half accuracy. Depending on the plant design, the RPI System may be analog or digital. The digital system is called the Digital Rod Position Indication (DRPI) System. Both units at DCPD have a DRPI System.

The shutdown margin (SDM) is defined in NUREG-1431 as the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:

- a. All RCCAs are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM, and
- b. In Power Operation and Startup, the fuel and moderator temperatures are changed to the nominal zero power design level.

The Core Operating Limits Report (COLR) is defined in NUREG-1431 as the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits must be determined for each reload cycle in accordance with TS 5.6.5. Plant operation within these limits is addressed in individual TSs.

2.2 Description of Proposed Changes

This SE addresses proposed changes to the TSs governing rod group alignment limits (TS 3.1.4), shutdown bank insertion limits (TS 3.1.5), control bank insertion limits (TS 3.1.6), and rod position indication (TS 3.1.7). The specific proposed changes are described in the following subsections.

2.2.1 Provide Time to Correct Rod Movement Failures that Do Not Affect Operability

The limiting condition for operation (LCO) 3.1.5 requires that each shutdown bank shall be within insertion limits specified in the COLR. Current Condition A for one or more shutdown banks not within the limits, requires:

A.1.1 Verify SDM to be within the limits provided in the COLR within 1 hour.

OR

A.1.2 Initiate boration to restore SDM to within limit within 1 hour.

AND

A.2 Restore shutdown banks to within limits within 2 hours.

LCO 3.1.6 requires that each control bank shall be within insertion, sequence, and overlap limits specified in the COLR. Current Condition A for control bank insertion limits not met requires:

A.1.1 Verify SDM to be within the limits provided in the COLR within 1 hour.

OR

A.1.2 Initiate boration to restore SDM to within limit within 1 hour.

AND

A.2 Restore control bank(s) to within limits within 2 hours.

The proposed change would add a new Condition A to LCO 3.1.5 that would require, with one shutdown bank inserted ≤ 16 steps beyond the insertion limits specified in the COLR,

A.1 Verify all control banks are within the insertion limits specified in the COLR within 1 hour.

AND

A.2.1 Verify SDM is within the limits specified in the COLR within 1 hour.

OR

A.2.2. Initiate boration to restore SDM to within limit within 1 hour.

AND

A.3 Restore the shutdown bank to within the insertion limits specified in the COLR within 24 hours.

The existing Condition A would be renumbered as Condition B and would be modified to apply for one or more shutdown banks not within limits for reasons other than Condition A. The existing RA A.1.1 would be edited to change a phrase from "provided in the COLR" to "specified in the COLR." The existing RAs A.1.1, A.1.2, and A.2 would be renumbered B.1.1, B.1.2, and B.2, respectively. The existing Condition B and RA B.1 would be renumbered Condition C and RA C.1, respectively.

The proposed change would add a new Condition A to LCO 3.1.6 that would require, if control bank A, B, or C is inserted ≤ 16 steps beyond the insertion, sequence, or overlap limits specified in the COLR:

A.1 Verify all shutdown banks are within the insertion limits specified in the COLR within 1 hour.

AND

A.2.1 Verify SDM is within the limits specified in the COLR within 1 hour.

OR

A.2.2. Initiate boration to restore SDM to within limit within 1 hour.

AND

A.3 Restore the control bank to within the insertion, sequence, and overlap limits specified in the COLR within 24 hours.

The existing Condition A would be renumbered as Condition B and would be modified to apply for control bank insertion limits not met for reasons other than Condition A. The existing RA A.1.1 would be edited to change a phrase from "provided in the COLR" to "specified in the COLR." The existing RAs A.1.1, A.1.2, and A.2 would be renumbered B.1.1, B.1.2, and B.2, respectively.

The existing Condition B would be modified to apply when control bank sequence or overlap limits are not met for reasons other than Condition A. The existing RA B.1.1 would be edited to change a phrase from "provided in the COLR" to "specified in the COLR." The existing Condition B and RAs B.1.1, B.1.2, and B.2 would be renumbered as Condition C and RAs C.1.1, C.1.2, and C.2, respectively. The existing Condition C and RA C.1 would be renumbered as Condition D and RA D.1, respectively.

The shutdown banks must be within their insertion limits any time the reactor is critical or approaching criticality. This ensures that a sufficient amount of negative reactivity is available to shut down the reactor and maintain the required SDM following a reactor trip.

The limits on control banks sequence, overlap, and physical insertion, as defined in the COLR, must be maintained because they serve the function of preserving power distribution, ensuring that the SDM is maintained, ensuring that ejected rod worth is maintained, and ensuring adequate negative reactivity insertion is available on trip.

2.2.2 Provide an Alternative to Frequent Verification of Rod Position Using the Movable Incore Detectors

LCO 3.1.7 requires that the DRPI System and the Demand Position Indication System be operable during Startup and Power Operation. Condition A applies for one DRPI per group inoperable for one or more groups of rods. The associated RAs are:

- A.1 Verify the position of the rods with inoperable position indicators indirectly by using core power distribution measurement information once per 8 hours.
- OR
- A.2 Reduce thermal power to ≤ 50 percent RTP [rated thermal power] within 8 hours.

The proposed change would add two new RAs (RA A.2.1 and RA A.2.2) to Condition A as alternatives to the once-per-8-hour indirect determination of rod position. The revised RAs would be:

- A.1 Verify the position of the rod with inoperable DRPI indirectly by using core power distribution measurement information once per 8 hours.
- OR
- A.2.1 Verify the position of the rod with inoperable DRPI indirectly by using core power distribution measurement information within 8 hours, once per 31 EFPD [effective full power days] (days of full power operation) thereafter, within 8 hours after discovery of each unintended rod movement, within 8 hours after each movement of rod with inoperable DRPI > 12 steps, prior to THERMAL POWER exceeding 50% RTP, and within 8 hours after reaching RTP.

AND

- A.2.2 Restore inoperable DRPI to operable status prior to entering MODE 2 (Startup) from MODE 3 (Hot Standby).

OR

- A.3 Reduce THERMAL POWER to ≤ 50 percent RTP within 8 hours.

LCO 3.1.4 requires that all individual indicated rod positions shall be within 12 steps of their group step counter demand position. The 12-step agreement limit between the Bank Demand Position Indication System and the DRPI System indicates that the Bank Demand Position Indication System is adequately calibrated, and can be used for indication of the measurement of control rod bank position. When one DRPI channel per group fails, the position of the rod

may still be determined indirectly by use of the movable incore detectors. Additionally, core power distribution information at DCPD can be obtained from the Power Distribution Monitoring System (PDMS).

Surveillance Requirement (SR) 3.1.4.1 requires verification that the individual rods are within the alignment limit in accordance with the Surveillance Frequency Control Program. This SR is proposed to be modified by the addition of a Note to indicate that the SR is not applicable for rods with an inoperable rod position indicator or demand position indicator.

Verification that individual rod positions are within alignment limits at the Frequency specified in the Surveillance Frequency Control Program provides a history that allows the operator to detect a rod that is beginning to deviate from its expected position. The specified Frequency takes into account other rod position information that is continuously available to the operator in the control room, so that during actual rod motion, deviations can immediately be detected.

2.2.3 Allow Time for Thermal Equilibrium of Analog RPI

This section of TSTF-547 and the corresponding section of the model SE is not applicable to plants with DRPI systems. Both units at DCPD have DRPI systems. This does not impact the evaluation of the other TS changes described in this SE.

2.2.4 Clarify SRs in TS 3.1.4 and TS 3.1.7

LCO 3.1.4 specifies that all shutdown and control rods shall be operable and individual indicated rod positions shall be within 12 steps of their group step counter demand position.

SR 3.1.4.1 requires verifying that the position of individual rods are within the alignment limits with a Frequency in accordance with the Surveillance Frequency Control Program. The proposed change is the addition of a Note to SR 3.1.4.1 stating that the SR is not required to be performed for rods associated with an inoperable rod position indicator or demand position indicator. This Note is proposed to be added because SR 3.1.4.1 cannot be performed for rods with an inoperable rod position indicator or demand position indicator.

SR 3.1.7.1 requires verification that each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel. The proposed change is the addition of a Note to SR 3.1.7.1 stating that the SR would not be required to be met for DRPIs associated with rods that do not meet LCO 3.1.4.

2.2.5 Eliminate an Unnecessary RA from TS 3.1.7

LCO 3.1.7 requires that the DRPI System and the Demand Position Indication System shall be operable during Mode 2, Startup, and Mode 1, Power Operation. Condition B is applicable when more than one DRPI per group is inoperable. Existing RA B.2 states, "Monitor and record reactor coolant system Tavg."

RA B.2 is proposed to be deleted.

The existing RA B.3 is also proposed to be deleted as described below in Section 2.2.6, Item 5. Existing RA B.4 would be renumbered as B.2.

2.2.6 Other Proposed Changes

The proposed changes described in this section are editorial and do not change the technical content.

1. LCO 3.1.4, Condition B, would be revised to eliminate RA B.1 and to combine RAs B.2.4 and B.2.5. Condition B applies when one rod is not within the alignment limits and RA B.1 requires restoring the rod to within limits within 1 hour. An alternative set of RAs is provided in the RA section, and will continue to be required when Condition B is applicable. RA B.1 is an Action that requires restoration of equipment such that the Condition does not apply. Restoring equipment to operable status is understood to be an option. Therefore, stating this as an RA is not necessary.

Combining RAs B.2.4 and B.2.5 is editorial and has no technical implications.

2. LCO 3.1.5 and LCO 3.1.6 contain a note modifying their Applicability that states "This LCO is not applicable while performing SR 3.1.4.2." The proposed change moves the LCO 3.1.5 and LCO 3.1.6 Applicability Notes to LCO Notes and revises the Notes to state, "Not applicable to shutdown banks inserted while performing SR 3.1.4.2" for LCO 3.1.5 and "Not applicable to control banks inserted while performing SR 3.1.4.2" for LCO 3.1.6. This change clarifies the note and does not alter its meaning.
3. TS 3.1.7 would be revised to consistently use the defined abbreviation "DRPI."
4. TS 3.1.7, Condition A, would be revised from "for one or more groups" to the more standard terminology "in one or more groups," and TS 3.1.7, Condition B, would be revised to include the phrase "in one or more groups" to be more consistent with the wording of Condition A.
5. TS 3.1.7, RA B.3, is redundant to RA A.1. RA B.3 is proposed to be deleted. Condition A applies when one DRPI per group is inoperable and Condition B applies when more than one DRPI per group is inoperable. Each entry into Condition B also requires entry into Condition A. Restating the RA is not necessary.
6. TS 3.1.7, Condition C, would be revised to contain similar terminology to Conditions A and B. The existing Condition C states, "One or more rods with inoperable DRPIs have been moved in excess of 24 steps in one direction since the last determination of the rod's position." Conditions A and B are worded such that the condition describing the inoperable equipment (e.g., "One DRPI per group inoperable...") is listed first. The proposed change rewords Condition C to state, "One or more DRPI inoperable in one or more groups and associated rod has been moved > 24 steps in one direction since the last determination of the rod's position."
7. LCO 3.1.7, Condition D, would be revised from "One demand position indicator per bank inoperable for one or more banks" to "One or more demand position indicators per bank inoperable in one or more banks." The proposed change makes the terminology consistent with the Note modifying the Actions Table.

The current TS 3.1.7 is modified by a Note which states, "Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator." The Bases for the Note states that the Note is acceptable because the RAs for each

condition provide appropriate compensatory actions for each inoperable indicator. There is one demand position indicator per group of rods. For banks with two groups of rods, there are two demand indicators per bank. The separate condition entry Note modifying the TS 3.1.7 Actions states that separate condition entry is allowed for inoperable demand position indicators which means that the Condition D is applicable to more than one inoperable demand position indicator per bank. The proposed change makes the existing Condition D terminology consistent with the Note.

2.2.7 Variations from TSTF-547

The licensee identified several variations from the TS changes contained in TSTF-547, Revision 1:

1. TSTF-547 revises TS 3.1.7 RAs A.1 and C.1 and adds a new RA A.2.1 that requires verifying rod position using movable incore detectors. DCPD has an additional method of indirectly determining rod position by using the PDMS. The DCPD TSs currently incorporate use of the PDMS for power distribution information. Therefore, DCPD TS 3.1.7 currently requires use of "core power distribution measurement information" in lieu of the "movable incore detectors" found in the Westinghouse Standard Technical Specifications (STS).
2. The existing DCPD TS 3.1.4 RAs B.2.1.1 and B.2.3, TS 3.1.5 RA A.1.1, TS 3.1.6 RAs A.1.1 and B.1.1 use the phrase "provided in the COLR." The Westinghouse STS and TSTF-547 use the phrase "specified in the COLR." The licensee has proposed to adopt the standard terminology for the TS changes contained in TSTF-547.
3. TSTF-547 contains the following oversight in new RA A.2.1 to TS 3.1.7 (with underline added for effect):

Verify the position of the rods_u with inoperable DRPI indirectly by using the movable incore detectors.

To be consistent with the changes made to RA A.1, "rod" (singular) should have been used instead of "rods" (plural). The DCPD markups correct this oversight by using "rod" (singular) for this RA.

2.3 Regulatory Review

The categories of items required to be in the TSs are provided in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Per 10 CFR 50.36(c)(2)(i), when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met. The regulation at 10 CFR 50.36(c)(3) requires TSs to include items in the category of SRs, which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met. Also, 10 CFR 50.36(a)(1) states, in part, that "[a] summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications."

The NRC staff's guidance for the review of TSs is in Chapter 16, "Technical Specifications," Revision 3, dated March 2010 (ADAMS Accession No. ML100351425) of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition." As described therein, as part of the regulatory standardization effort, the NRC staff has prepared STS for each of the LWR nuclear designs. NUREG-1431 contains the STS for Westinghouse-designed plants.

3.0 TECHNICAL EVALUATION

During the review of Traveler TSTF-547, the NRC staff reviewed the proposed changes to NUREG-1431 and the technical justification for the changes provided in Traveler TSTF-547. The NRC staff reviewed the technical justification for the proposed changes to ensure that the reasoning was logical, complete, and clearly written as described in Chapter 16 of NUREG-0800. The NRC staff also reviewed the proposed changes for continued compliance with the requirements of 10 CFR 50.36 and for consistency with conventional terminology and with the format and usage rules embodied in the STS. In its SE for TSTF-547, Revision 1, the NRC staff did not specify any limitations or conditions for adoption of the Traveler by future applicants.

3.1 Provide Time to Correct Rod Movement Failures that Do Not Affect Operability Review

The proposed new Condition A of TSs 3.1.5 and 3.1.6 for shutdown and control bank insertion limits would allow 24 hours to restore a single bank to be within its insertion limit when inserted below the insertion limit. With one shutdown bank inserted a maximum of 16 steps beyond the insertion limit, or Control bank A, B, or C inserted a maximum of 16 steps beyond the insertion, sequence, or overlap limits, the RAs associated with new Condition A would also require verification that all other control (LCO 3.1.5, Condition A) and shutdown banks (LCO 3.1.6, Condition A) are within the insertion limits; and verification that the reactor can be shutdown using control rods or boration. The Completion Time (CT) for these RAs would be 1 hour.

The new conditions define limits of both duration and insertion if a bank is immovable (but not untrippable) due to failures external to the CRDM. A maximum of one control or shutdown bank may be inserted beyond the limits for a maximum of 24 hours provided all other banks are within the insertion limits and that the reactor could be shut down using control rods or boration. The new Condition A imposes a limit on the insertion of 16 steps less than the insertion limit. The value of 16 steps corresponds to the minimum number of steps that the rods must be moved to ensure correct performance of SR 3.1.4.2.

The NRC staff reviewed the justification for the proposed addition of Condition A to TS 3.1.5 and TS 3.1.6 provided in the Technical Evaluation Section of Traveler TSTF-547, to ensure that the reasoning is logical, complete, and clearly written. The justification in Traveler TSTF-547 states:

1. All control and shutdown rod assemblies are required to be Operable. If a rod is untrippable (i.e., inoperable), then a plant shutdown is required in accordance with LCO 3.1.4, Condition A.
2. Only one control bank and shutdown bank may be inserted beyond insertion limits by no more than 16 steps. If one or more control banks or shutdown banks exceed the insertion limit, a brief time period is permitted to correct the condition and then a plant shutdown is required.

3. If one rod is not within the alignment limits, adequate SDM is verified and a power reduction is required by LCO 3.1.4, Condition B. If more than one rod is not within the alignment limit as defined in LCO 3.1.4, adequate SDM is verified and a plant shutdown is required.

The insertion limits are established to ensure a sufficient amount of negative reactivity can be rapidly inserted to shut down the reactor. The NRC staff finds that allowing continued full-power operations for 24 hours with a rod movement failure is acceptable for the following reasons:

- (1) the Shutdown Margin continues to be met;
- (2) all control and shutdown rods are trippable – i.e., capable of being rapidly inserted into the core;
- (3) only one bank may exceed insertion limits by no more than a specified number of steps;
- (4) all immovable rod assemblies are aligned; and
- (5) the rods must be restored to within the insertion limits within 24 hours.

The change to TS 3.1.5 and TS 3.1.6 to provide time to correct rod movement failures that do not affect operability will allow sufficient time for diagnosis and repairs while maintaining the safety function of the control rods since the affected rods are still trippable. The thermal margins may be affected by power distribution changes due to control rod bank insertion, both during the insertion and during the resulting local xenon transient. However, insertions at or near the typical value of 16 steps from fully withdrawn, as provided in the proposed changes to TSs 3.1.5 and 3.1.6, would result in a very small negative reactivity impact at the top of active fuel. The resulting effect on the axial power distribution is not expected to be significant. In addition, alignment of all rods with the rod bank position (as per LCO 3.1.4) must be maintained and it will be verified that the reactor can still be shutdown. Therefore, the NRC staff has determined that the proposed 24-hour CT for Condition A in LCOs 3.1.5 and 3.1.6 specifying shutdown bank and control bank insertion limits is acceptable.

The NRC staff concludes that TS 3.1.5 and TS 3.1.6, as modified by the addition of Condition A, continue to specify the minimum performance level of equipment needed for safe operation of the facility as an LCO; and continue to specify the appropriate remedial measures if the LCO is not met. SRs are not being changed by the addition of Condition A. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met because the minimum performance level of equipment needed for safe operation of the facility is contained in the LCO and the appropriate remedial measures are specified if the LCO is not met.

3.2 Provide an Alternative to Frequent Verification of Rod Position Using the Movable Incore Detectors Review

LCO 3.1.7 requires that the DRPI System and the Demand Position Indication System be operable during Power Operation and Startup. When one or more DRPI per group are inoperable for one or more groups, current TS 3.1.7 requires verification of rod position once per 8 hours using core power distribution measurement information or a reduction in thermal power to less than or equal to 50 percent RTP within 8 hours. The proposed change would provide an alternative set of RAs.

New RA A.2.1 would require the use of core power distribution measurement information to verify indirectly the position of the rod within 8 hours of the inoperability of DRPI, 8 hours after discovery of each unintended rod movement, 8 hours after each greater than 12 step movement of a rod with inoperable DRPI, prior to exceeding 50 percent RTP, 8 hours after reaching RTP,

and once per 31 effective full power days (EFPD) thereafter. New RA A.2.2 would require the inoperable DRPI to be restored to operable status prior to entering Startup from Hot Standby.

The implementation of new RAs A.2.1 and A.2.2 would allow the use of an alternative monitoring scheme until the next shutdown, after which the DRPI must be restored to an operable status. The NRC staff finds that the new RAs A.2.1 and A.2.2 and CTs are appropriate because they require verification of rod position following circumstances in which rod motion could occur. This is a more tailored approach than current TS 3.1.7 RA A.1, which requires verification of rod position using core power distribution measurement information once per 8 hours, regardless of whether the rods have moved. Additionally, the new RAs A.2.1 and A.2.2 contain a requirement to restore the DRPI to operable status prior to restart.

If the rod position indication is failed for an individual rod, its position is determined indirectly from core power distribution measurement information. At DCPD, core power distribution measurement information can be obtained from flux maps using the movable incore detectors, or from the PDMS. The NRC staff has determined that this change, which verifies rod position indirectly based on the occurrence of events requiring rod motion, rather than determining position on a specified frequency, is acceptable because events requiring rod motion of the shutdown banks and control banks A, B, and C are relatively infrequent during steady state operation. Events involving significant movement of rods in control bank D are also relatively infrequent. The indirect determination of rod position is required after significant changes in power level or following substantial rod motion.

The addition of the Note to SR 3.1.4.1 stating that the SR is not required to be performed for rods associated with an inoperable DRPI or demand position indicator is appropriate because the RAs of TS 3.1.7 for an inoperable DRPI provide the appropriate actions for indirectly determining the position of the affected rods.

The NRC staff concludes that the addition of an alternative monitoring scheme to indirectly determine the position of rods associated with an inoperable DRPI is acceptable. TS 3.1.7, as modified, continues to specify the minimum performance level of equipment needed for safe operation of the facility as an LCO and continues to specify the appropriate remedial measures if the LCO is not met. The revised SR 3.1.4.1, which has been clarified to specify when it is required to be performed, continues to be an appropriate test to ensure that the necessary quality of systems is maintained. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met because the minimum performance level of equipment needed for safe operation of the facility is contained in the LCO and the appropriate remedial measures are specified if the LCO is not met. The NRC staff finds that the requirements of 10 CFR 50.36(c)(3) continue to be met because the revised SR provides the appropriate testing to ensure the necessary quality of components is maintained and that the LCO will be met.

3.3 Clarify SRs in TS 3.1.4 and TS 3.1.7 Review

3.3.1 Clarification of SR 3.1.4.1

LCO 3.1.4 requires that all shutdown and control rods shall be operable and individual indicated rod positions shall be within 12 steps of their group step counter demand position. SR 3.1.4.1 requires verification of the individual rod positions within the alignment limit periodically. SR 3.1.4.1 cannot be performed for rods with an inoperable bank demand position indicator. Failure to meet an SR is considered a failure to meet an LCO requirement. Therefore, if SR 3.1.4.1 cannot be performed, entry into LCO 3.1.4, Condition D, is required. LCO 3.1.4,

Condition D, applies when more than one rod is not within the alignment limit. The RA associated with Condition D requires, in part, that the reactor be in Mode 3 (Hot Standby) within 6 hours.

LCO 3.1.7 requires the DRPI System and the Demand Position Indication System to be operable. LCO 3.1.7, Condition D, applies if one demand position indicator per bank is inoperable for one or more banks. The Condition D RAs require verification that all DRPIs for the affected banks are operable and require verification that the most withdrawn rod and least withdrawn rod of the affected banks are less than or equal to 12 steps apart once per 8 hours. Alternatively, thermal power must be reduced to less than or equal to 50 percent RTP.

A Note would be added to SR 3.1.4.1 stating that this SR is not required to be performed for rods associated with an inoperable demand position indicator or DRPI. The alignment limit is based on the demand position indicator. If the bank demand position indicator is inoperable, the SR cannot be performed.

Following the proposed modification of SR 3.1.4.1, Condition D of LCO 3.1.7 would be the applicable Condition to be entered in the event of inoperable demand position indicators. The RAs associated with Condition D of LCO 3.1.7 provide the appropriate actions in this situation by requiring that the DRPIs are operable and that the individual rods in the bank are not misaligned by more than 12 steps.

3.3.2 Clarification of SR 3.1.7.1

LCO 3.1.4 requires that all shutdown and control rods shall be operable and individual indicated rod positions shall be within 12 steps of their group step counter demand position.

LCO 3.1.7 requires the DRPI System and the Demand Position Indication System to be operable.

SR 3.1.7.1 requires verification that each DRPI agree within 12 steps of the group demand position for the full indicated range of rod travel. This SR is performed once prior to criticality after each removal of the reactor vessel head. Failure to meet an SR is considered a failure to meet the LCO per SR 3.0.1. The requirements of SRs must be satisfied in between performances of the surveillance test itself. Therefore, if a control or shutdown rod is not within 12 steps of its bank demand position indication, then the requirements of both LCO 3.1.4 and LCO 3.1.7 are not met.

A Note would be added to SR 3.1.7.1 stating that this SR is not required to be met for DRPIs associated with rods that do not meet LCO 3.1.4. If a rod is known not to be within 12 steps of the group demand position, LCO 3.1.4 provides the appropriate RAs. With one rod not within the alignment limit, LCO 3.1.4 Condition B requires verification of shutdown margin or boration until SDM is met; a reduction in RTP, periodic reverification of shutdown margin, verification that heat flux and nuclear enthalpy rise hot channel factors are within limits, and safety analyses must be reevaluated to confirm results remain valid for duration of operation under these conditions. If more than one rod is not within the alignment limit, the SDM must be determined by verifying that the shutdown margin is within limits or by initiating boration to restore required SDM and plant shutdown is required.

3.3.3 Evaluation of SR 3.1.4.1 and SR 3.1.7.1 Changes

The NRC staff reviewed the technical justification for the proposed changes provided in the Traveler TSTF-547 for logical reasoning, completeness, and clarity. The purpose of the changes is to prescribe the appropriate Actions to be followed when equipment is inoperable.

TS 3.1.4 provides limits on rod alignment to ensure acceptable power peaking factors and local linear heat rates and an acceptable shutdown margin, all of which are initial conditions in the applicable safety analyses. It is appropriate to consolidate requirements associated with rod misalignments in this TS. TS 3.1.7 provides requirements for instrumentation to monitor rod position. The instrumentation is used to verify that the rod alignment limits in TS 3.1.4 are satisfied. Similarly, it is appropriate to consolidate requirements associated with instrumentation operability in this TS.

The NRC staff concludes that the clarifications to SRs 3.1.4.1 and 3.1.7.1 to specify configurations in which performance of the SRs is not required are appropriate. The TSs, as modified, continue to specify the minimum performance level of equipment needed for safe operation of the facility as an LCO, and continue to specify the appropriate remedial measures if the LCO is not met. The revised SRs 3.1.4.1 and 3.1.7.1 continue to be appropriate, because they ensure the necessary quality of systems is maintained and that the LCOs will be met. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) and 10 CFR 50.36(c)(3) continue to be met.

3.4 Eliminate an Unnecessary RA from LCO 3.1.7 Review

The NRC staff reviewed the justification for deletion of LCO 3.1.7, RA B.2, which states to monitor and record reactor coolant system average temperature (T_{avg}) once per 1 hour. RA B.2 is one of the RAs associated with LCO 3.17, Condition B. Condition B applies when more than one DRPI per group is inoperable in one or more groups. RA B.1 requires that the control rods be placed in manual control immediately and existing RA B.4 (renumbered as B.2) requires restoring the inoperable position indicators to operable status such that a maximum of one DRPI per group is inoperable within 24 hours.

The NRC staff has determined that RA B.2 provides no safety benefit for identifying trends in reactor coolant system T_{avg} . This RA was intended to help assure that significant changes in power distribution and adverse impacts on the ability to shut down the reactor are avoided. During normal steady state power operation, there is very little rod motion. LCO 3.1.7, RA B.1 and RA B.4 (renumbered as RA B.2), continue to apply when more than one DRPI per group is inoperable. LCO 3.1.4 and LCO 3.1.7 provide the appropriate requirements for monitoring rod position and alignment and provide the appropriate actions if a rod is misaligned. This provides the necessary verification that SDM is maintained. The nuclear instrumentation monitors neutron flux in the core providing indication of changes in power distribution. Therefore, the staff concludes that RA B.2 of LCO 3.1.7 is unnecessary and can be deleted.

The NRC staff concludes that the proposed changes to LCO 3.1.7 are acceptable because the LCO continues to specify the minimum performance level of equipment needed for safe operation of the facility. As described in the preceding paragraph, the appropriate remedial measures are prescribed when the LCO is not met. SRs are not being changed by the deletion of RA B.2. The staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met.

3.5 Other Proposed Changes Review

The NRC staff found that the following proposed changes are editorial in nature and do not change the TS requirements, and are therefore acceptable.

1. LCO 3.1.4, Condition B, would be revised to eliminate RA B.1 and to combine RAs B.2.4 and B.2.5. Condition B applies when one rod is not within the alignment limits and RA B.1 requires restoring the rod to within limits within 1 hour. An alternative set of RAs is provided in the RA section, and will continue to be required when Condition B is applicable. RA B.1 is an Action that requires restoration of equipment such that the Condition does not apply. Restoring equipment to operable status is understood to be an option. Therefore, stating this as an RA is not necessary. Also, combining RAs B.2.4 and B.2.5 is editorial and has no technical implications.
2. LCO 3.1.5 and LCO 3.1.6 contain a note modifying their Applicability that states "This LCO is not applicable while performing SR 3.1.4.2." The proposed change moves the LCO 3.1.5 and LCO 3.1.6 Applicability Notes to LCO Notes and revises the Notes to state, "Not applicable to shutdown banks inserted while performing SR 3.1.4.2" for LCO 3.1.5 and "Not applicable to control banks inserted while performing SR 3.1.4.2" for LCO 3.1.6. This change clarifies the note and does not alter its meaning.
3. TS 3.1.7 would be revised to consistently use the defined abbreviation "DRPI."
4. TS 3.1.7, Condition A, would be revised from "for one or more groups" to the more standard terminology "in one or more groups," and TS 3.1.7, Condition B, would be revised to include the phrase "in one or more groups" to be more consistent with the wording of Condition A.
5. TS 3.1.7, RA B.3, is redundant to RA A.1. RA B.3 is proposed to be deleted. Condition A applies when one DRPI per group is inoperable and Condition B applies when more than one DRPI per group is inoperable. Each entry into Condition B also requires entry into Condition A. Restating the RA is not necessary.
6. TS 3.1.7, Condition C, would be revised to contain similar terminology to Conditions A and B. The existing Condition C states, "One or more rods with inoperable DRPIs have been moved in excess of 24 steps in one direction since the last determination of the rod's position." Conditions A and B are worded such that the condition describing the inoperable equipment (e.g., "One DRPI per group inoperable...") is listed first. The proposed change rewords Condition C to state, "One or more DRPI inoperable in one or more groups and associated rod has been moved > 24 steps in one direction since the last position determination."
7. LCO 3.1.7, Condition D, would be revised from "One demand position indicator per bank inoperable for one or more banks" to "One or more demand position indicators per bank inoperable in one or more banks." The proposed change makes the terminology consistent with the Note modifying the Actions Table.

The current TS 3.1.7 is modified by a Note, which states, "Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator." The Bases for the Note states that the Note is acceptable because the RAs for each condition provide appropriate compensatory actions for each inoperable indicator.

There is one demand position indicator per group of rods, two demand indicators per bank in those banks with two groups. The separate condition entry Note modifying the TS 3.1.7 Actions states that separate condition entry is allowed for inoperable demand position indicators which means that Condition D is applicable to more than one inoperable demand position indicator per bank. The proposed change makes the existing Condition D terminology consistent with the Note.

The regulation at 10 CFR 50.36(a)(1) states, in part: "A summary statement of the bases or reasons for such specifications ... shall also be included in the application, but shall not become part of the technical specifications." Accordingly, along with the proposed TS changes, PG&E also submitted TS Bases changes that corresponded to the proposed STS changes for information only. The NRC staff verified that PG&E had included in the application TS Bases changes, but did not review the TS Bases changes.

3.6 Variations from TSTF-547 Review

The proposed variations from TSTF-547, Revision 1, are described in Section 2.2.7 of this SE and have been reviewed by the NRC staff.

Variation 1 involves the use of core power distribution information to indirectly determine rod position. The Westinghouse STS and TSTF-547 specify the use of the movable incore detectors to indirectly determine rod position. At DCP, rod position may be determined indirectly using either the PDMS or the movable incore detectors. The use of the PDMS was found acceptable by the NRC staff in License Amendment Nos. 164 and 166 for DCP, Units 1 and 2, respectively (ADAMS Accession No. ML040920245); and is currently reflected in the DCP TSs, including TS 3.1.7, RAs A.1 and C.1. The staff determined that the use of either the movable incore detectors or the PDMS continues to provide an acceptable method of indirectly determining rod position.

The NRC staff determined that Variations 2 and 3 are editorial in nature and do not impact the applicability or the conclusions presented in the SE of TSTF-547, Revision 1. The changes are therefore acceptable.

3.7 Summary of NRC Staff Conclusions

The regulations at 10 CFR 50.36 require that TSs include items in specified categories, including LCOs and SRs. The proposed changes would modify the LCOs, Conditions, RAs, CTs, and SRs applicable to control rod and shutdown rod insertion and alignment limits and the instrumentation to monitor rod position and alignment. The TSs would continue to specify the LCOs and specify the remedial measures to be taken if one of these requirements is not satisfied. The TSs would continue to specify the appropriate SRs for tests and inspections to ensure the necessary quality of affected structures, systems, and components is maintained and that the LCOs will be met. Therefore, the NRC staff concludes that the proposed LCOs and SRs meet the requirements of 10 CFR 50.36(c)(2) and 10 CFR 50.36(c)(3), respectively, and are, therefore, acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the California State official was notified of the proposed issuance of the amendments on April 3, 2018. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. 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 November 7, 2017 (82 FR 51653). 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) there is reasonable assurance that 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: Margaret Chernoff, NRR/DSS/STSB

Date: April 30, 2018

SUBJECT: DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: REVISION TO TECHNICAL SPECIFICATIONS TO ADOPT TECHNICAL SPECIFICATIONS TASK FORCE (TSTF) CHANGE TRAVELER TSTF-547, REVISION 1 (EPID L-2017-LLA-0309) DATED APRIL 30, 2018

DISTRIBUTION:

PUBLIC	RidsNrrLAPBlechman Resource
PM File Copy	RidsRgn4MailCenter Resource
RidsACRS_MailCTR Resource	RidsNrrPMDiabloCanyon Resource
RidsNrrDorlLpl4 Resource	RBeaton, NRR/DSS/SRXB
RidsNrrDssStsb Resource	MChernoff, NRR/DSS/STSB
RidsNrrDssSrxb Resource	

ADAMS Accession No. ML18096A054

*Memo dated March 8, 2018

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DSS/STSB/BC*
NAME	BSingal	PBlechman	VCusumano
DATE	4/11/18	4/11/18	3/8/18
OFFICE	OGC-NLO (subject to comments)	NRR/DORL/LPL4/BC	NRR/DORL/LPL4/PM
NAME	JWachutka	RPascarelli	BSingal
DATE	4/19/18	4/27/18	4/30/18

OFFICIAL RECORD COPY