



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

July 1, 2015

Mr. Edward D. Halpin
Senior Vice President and
Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

**SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF
AMENDMENTS REGARDING REVISION TO TECHNICAL SPECIFICATION
(TS) 3.8.1, "AC SOURCES – OPERATING" (TAC NOS. MF3826 AND MF3827)**

Dear Mr. Halpin:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 218 to Facility Operating License No. DPR-80 and Amendment No. 220 to Facility Operating License No. DPR-82 for the Diablo Canyon Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated March 27, 2014, as supplemented by letters dated February 19 and April 29, 2015.

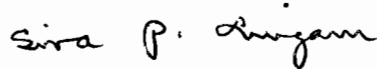
The amendments revise various surveillance requirements associated with emergency diesel generators (DGs) in TS 3.8.1, "AC [Alternating Current] Sources - Operating." The changes reflect the results of a revised load study analysis, as well as a revision to the DG 30-minute load rating. These changes were submitted to address multiple issues identified by NRC and licensee investigations, and are intended to correct various non-conservative TS values associated with DG testing.

E. Halpin

- 2 -

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

Sincerely,

A handwritten signature in cursive script, reading "Siva P. Lingam".

Siva P. Lingam, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosures:

1. Amendment No. 218 to DPR-80
2. Amendment No. 220 to DPR-82
3. Safety Evaluation

cc w/encls: Distribution via 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 NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 218
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 March 27, 2014, as supplemented by letters dated February 19 and April 29, 2015, 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.

Enclosure 1

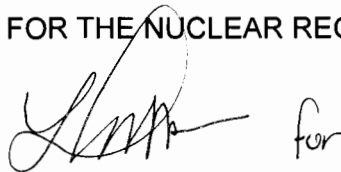
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. DPR-80 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 218, 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 240 days.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'M. Markley', followed by the word 'for' in a cursive script.

Michael T. Markley, Chief
Plant Licensing Branch IV-1
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: July 1, 2015



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

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 220
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 March 27, 2014, as supplemented by letters dated February 19 and April 29, 2015, 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.

Enclosure 2

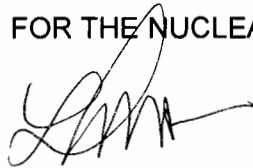
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. DPR-82 is hereby amended to read as follows:

- (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. 220, 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 240 days.

FOR THE NUCLEAR REGULATORY COMMISSION



for
Michael T. Markley, Chief
Plant Licensing Branch IV-1
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: July 1, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 218
TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 220 TO FACILITY OPERATING LICENSE NO. DPR-82
DOCKET NOS. 50-275 AND 50-323

Replace the following pages of the Facility Operating License Nos. DPR-80 and DPR-82, and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License No. DPR-80

REMOVE

-3-

INSERT

-3-

Facility Operating License No. DPR-82

REMOVE

-3-

INSERT

-3-

Technical Specifications

REMOVE

3.8-4

3.8-5

3.8-6

3.8-7

3.8-8

--

3.8-9

3.8-10

INSERT

3.8-4

3.8-5

3.8-6

3.8-7

3.8-8

3.8-8a

3.8-9

3.8-10

- (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 8, as revised through Amendment No. 218, 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 8, as revised through Amendment No. 220, 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.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.3	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load of 2860 kW (nominal) and DG cooling system functions within design limits.</p>	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains a usable volume of ≥ 258 gal of fuel oil.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to transfer fuel oil from storage tanks to the day tank.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 -----NOTE----- All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts from standby condition and achieves: a. In ≤ 10 seconds, voltage ≥ 3785 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.8 -----NOTE----- This Surveillance shall not normally be performed for automatic transfers in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ----- Verify automatic and manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit and manual transfer from the alternate offsite circuit to the delayed access circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.9 -----NOTES----- 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. ----- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 63 Hz; b. Within 1.6 seconds following load rejection, the voltage is ≥ 3785 V and ≤ 4400 V; and c. Within 1.6 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.10 -----NOTE-----</p> <p>If performed with DG synchronized with offsite power, testing shall be performed at a power factor ≤ 0.84. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.</p> <p>-----</p> <p>Verify each DG does not trip and voltage is maintained ≤ 5096 V during and following a load rejection of 2860 kW (nominal).</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.11 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected loads through auto-transfer sequencing timers, 3. maintains steady state voltage ≥ 3980 V and ≤ 4340 V, 4. maintains steady state frequency ≥ 59.2 Hz and ≤ 60.8 Hz; and 5. supplies permanently connected and auto-connected loads for ≥ 5 minutes. 	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. <p>-----</p> <p>Verify on an actual or simulated Safety Injection signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds after auto-start and during tests, achieves voltage ≥ 3785 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads are energized from the alternate offsite power source; and e. Emergency loads are auto-connected through the ESF load sequencing timers to the alternate offsite power source. 	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.13	<p>Verify each DG's automatic trips are bypassed when the diesel engine trip cutout switch is in the cutout position and the DG is aligned for automatic operation except:</p> <ol style="list-style-type: none"> a. Engine overspeed; b. Generator differential current; and c. Low lube oil pressure; 	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.14 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. If performed with DG synchronized with offsite power, testing shall be performed at a power factor ≤ 0.84. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. <p>-----</p> <p>Verify each DG operates for ≥ 24 hours:</p> <ol style="list-style-type: none"> a. For ≥ 2 hours loaded at 2860 kW (nominal); and b. For the remaining hours of the test loaded at 2750 kW (nominal); and c. Verify DG cooling system functions within design limits. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.15 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded at 2750 kW (nominal). Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each DG starts and achieves:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3785 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz. 	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.16	<p>-----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</p> <p>-----</p> <p>Verify each DG:</p> <ul style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.17 -----NOTE----- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</p> <p>-----</p> <p>Verify, with a DG operating in test mode and connected to its bus, an actual or simulated Safety Injection signal overrides the test mode by:</p> <ol style="list-style-type: none"> Opening the auxiliary transformer breaker; and Automatically sequencing the emergency loads onto the DG. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.18 -----NOTE----- This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</p> <p>-----</p> <p>Verify each ESF and auto-transfer load sequencing timer is within its limits.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.19 -----NOTES----- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</p> <p>-----</p>	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 (continued)</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated Safety Injection signal:</p> <ul style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ul style="list-style-type: none"> 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencing timers, 3. achieves steady state voltage ≥ 3980 V and ≤ 4340 V, 4. achieves steady state frequency ≥ 59.2 Hz and ≤ 60.8 Hz; and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.20</p> <p>-----NOTE-----</p> <p>All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify when started simultaneously from standby condition, each DG achieves:</p> <ul style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3785 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz. 	<p>In accordance with the Surveillance Frequency Control Program</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 218 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 220 TO FACILITY OPERATING LICENSE NO. DPR-82
PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By application dated March 27, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14086A426), as supplemented by letters dated February 19 and April 29, 2015 (ADAMS Accession Nos. ML15050A389 and ML15119A430, respectively), Pacific Gas and Electric Company (PG&E or the licensee) requested changes to the Technical Specifications (TSs) for Diablo Canyon Power Plant (DCPP), Unit Nos. 1 and 2.

The proposed amendments revise TS 3.8.1, "AC [Alternating Current] Sources - Operating," for diesel generator (DG) testing. The proposed TS changes include:

- Revise Surveillance Requirements (SRs) 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 to change the allowable steady state DG operating voltage and frequency bands;
- Revise SR 3.8.1.3 to change the DG test loading criterion;
- Add verification of DG cooling system function for SRs 3.8.1.3 and 3.8.1.14, respectively;
- Revise SR 3.8.1.4 to change the DG day tank SR minimum volume;
- Revise SR 3.8.1.9 to revise the voltage and frequency recovery timing requirement;
- Revise SR 3.8.1.10 to change the DG full-load rejection test loading criterion and voltage limit;
- Revise SR 3.8.1.14 to change the DG 24-hour test loading criteria;

- Revise SR 3.8.1.15 to change the DG test prerequisite loading criterion; and
- Add a new note to SRs 3.8.1.10 and 3.8.1.14 to reduce the SR minimum DG operating power factor (PF) with the stipulation that PF limit requirements are not required if grid conditions do not permit.

The supplemental letters dated February 19 and April 29, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on August 19, 2014 (79 FR 49109).

2.0 REGULATORY EVALUATION

The NRC staff used the following regulatory requirements and regulatory guidance to evaluate the license amendment request (LAR).

General Design Criterion (GDC) 17, "Electric power systems," of Title 10 to the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," requires, in part, that onsite and offsite power systems be provided with sufficient capacity and capability to permit functioning of structures, systems, and components (SSCs) important to safety. Compliance with GDC 17 is discussed in the DCPD Updated Final Safety Analysis Report (UFSAR) Section 3.1.8.3.1.

GDC 18, "Inspection and testing of electric power systems," of 10 CFR 50, Appendix A requires, in part, that electric power systems important to safety be designed to permit appropriate periodic inspection and testing of important areas and features to assess the continuity of the systems and the condition of their components. Compliance with GDC 17 is discussed in the DCPD UFSAR Section 3.1.8.3.2.

The regulations in 10 CFR 50.36, "Technical specifications," state that each license authorizing operation of a production or utilization facility of a type described in Sections 10 CFR 50.21 or 50.22 will include technical specifications. The technical specifications incorporated in a license will be designed to include those significant design features, operating procedures and operating limitations which are considered important in providing reasonable assurance that the facility will be constructed and operated without undue hazard to public health and safety. Paragraph 50.36(c)(2)(ii) requires that "[a] technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the [criteria set forth in 10 CFR 50.36(c)(2)(ii)(A)-(D)]." Paragraph 50.36(c)(3) requires that TSs include 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 limiting conditions for operation will be met."

Paragraph 50.65(a)(1) of 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," requires that power reactor licensees monitor the performance or condition of SSCs against licensee-established goals in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions.

Such goals are to be established commensurate with safety and, where practical, take into account industrywide operating experience. When the performance or condition of an SSC does not meet established goals, appropriate corrective action must be taken. Paragraph 50.65(a)(3) requires, in part, that "[p]erformance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluations shall take into account, where practical, industry-wide operating-experience."

Atomic Energy Commission (AEC) Safety Guide 9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," dated March 10, 1971, states that a diesel generator set selected for use as a standby power supply should have the capability to (1) start and accelerate a number of large motor loads in rapid succession, and be able to sustain the loss of any such load, and (2) supply continuously the sum of the loads needed to be powered at any one time. This guide provides an acceptable way of assuring these objectives are met. Conformance and commitment to Safety Guide 9 is discussed in the DCPD UFSAR Section 8.3.1.1.6.1.13.

NRC Regulatory Guide (RG) 1.108, Revision 1, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power System at Nuclear Power Plants," August 1977 (ADAMS Accession No. ML12216A011), describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to periodic testing of diesel electric power units to ensure that the diesel electric power systems will meet their availability requirements.

RG 1.9, Revision 3, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Plants," dated July 1993 (ADAMS Accession No. ML003739929). Conformance and commitment to RG 1.9 is discussed in the DCPD LAR Section 3.5.

3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment, which is described in the Enclosure of the LAR.

3.1 Description of the Onsite Alternating Current (AC) Power Systems

The PG&E grid provides power to the DCPD preferred power supply, which is comprised of two, physically independent, offsite power circuits, the startup offsite power circuit (230 kiloVolts (kV)) and the auxiliary offsite power circuit (500 kV). Offsite power for startup and standby service is provided from the 230 kV transmission system. The auxiliary offsite power circuit (500 kV system) provides the delayed source of offsite power from any one of the three 500 kV transmission lines connecting to the 500 kV switchyard. The DCPD Electrical Distribution one-line diagram is shown in Figure 1 of the enclosure to the LAR.

Onsite AC auxiliary power is supplied by each unit's main generator and is also available for vital loads from six diesel engine-driven generators. Three DGs are dedicated to each unit. The DGs are the standby power supply when the preferred power supply is not available.

The load groups that are important to safety are connected to 4.16 kV vital buses, which are connected to a DG. The overall plant single line diagram is shown in UFSAR Figure 8.1-1. The loads on the vital buses and the capabilities of the DGs are listed in UFSAR Section 8.3.1.

The Class 1E 4160 Volt (V) distribution system provides power to engineered safety features (ESF) loads to safely shut down a unit.

Each of the following initiates the starting of the DGs:

- 1) A safety injection actuation signal from ESF actuation system.
- 2) Undervoltage on the startup offsite power circuit to each of the Class 1E 4160 V buses starts its respective DG.
- 3) Sustained under-voltage or loss of voltage on any of the Class 1E 4160 V buses starts its respective DG.

Under accident and loss-of-offsite power conditions, loads are sequentially connected to the bus by load-sequencer timers. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The load-sequence time interval tolerances ensure that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that those safety analysis assumptions regarding ESF equipment time delays are not violated.

3.2 Description of the DG Design

Three dedicated 4160 V, three-phase, 60 Hertz (Hz), 2600 kiloWatts (kW), 0.8 power factor (PF) continuous rating DGs are provided for each unit. The DGs are physically isolated from each other and from other equipment. Each DG supplies power to its associated Class 1E 4160 V bus. Any two of the three DGs and their buses are adequate to serve at least the minimum required ESF loads of a unit after a design-basis accident.

Each generator is rated at 3250 kV Amperes, 0.8 PF, 4160 V, 60 Hz, three-phase, Y connected, ungrounded, 80 degrees centigrade temperature rise, Class B insulation, with a drip-proof enclosure.

The DGs have a net continuous electrical output rating of 2600 kW at 0.8 PF, and 2750 kW for 2000 hours per year. Short-term ratings of the DGs are 2860 kW for 2 hours per 24 hours, and 3056 kW for 30 minutes (reduced from 3250 kW based upon a reassessment performed by the DG manufacturer). During the starting sequence for the safeguard loads, the DGs can also carry short-time overloads as discussed in Section 3.13 of the LAR.

The DGs were designed to AEC Safety Guide 9, Regulatory Position (RP) C.2, "Diesel Generator Testing." The standard ratings of the DGs are based upon inlet combustion air at the engine air intake filter less than or equal to 90 degrees Fahrenheit (°F) and jacket water to the after coolers less than or equal to 160 °F. If either or both of these parameters are exceeded, DG derating is required.

During transient conditions such as a design-basis loading scenario with nominal timer interval, the DGs maintain the electric power frequency within 5 percent, hold voltages to a minimum of 75 percent, and recover successfully by complying with Safety Guide 9 with the exception of RP C.4. Safety Guide 9, RP C.4, specifies that during the DG loading sequence, the voltage and frequency should be restored to within 10 percent and 2 percent of nominal, respectively, in less than 40 percent of each load sequence time interval. For auxiliary feedwater pump loading for DGs 1-1, 1-3, 2-2, and 2-3, the frequency is restored to within 2 percent of nominal in less than 60 percent of the load sequence time interval. Based on test data, DGs 1-1, 1-3, 2-2, and 2-3 have adequate margin to prevent overlapping of loads and meet the objectives of Safety Guide 9, RP C.4. This exception to Safety Guide 9 was approved by the NRC in License Amendment No. 211 to Facility Operating License No. DPR-80 and Amendment No. 213 to Facility Operating License No. DPR-82 for the DCP, Unit Nos. 1 and 2, respectively, dated March 29, 2012 (ADAMS Accession No. ML120790338).

3.3 Description of the DG Fuel Oil Day Tank

Each DG unit is equipped with a skid-mounted fuel oil day tank that has a capacity of 550 gallons, which provides about 2-1/2 hours of full load operation before fuel oil must be transferred from the underground storage tanks. In the unlikely event of malfunctions in both redundant fuel oil headers, such as a pump failure in one and piping blockage in the other, low level will be alarmed when sufficient fuel oil remains in the base mounted day tank for a nominal 1-hour period of operation of the DG at full load. This nominal 1-hour period is adequate for an operator (a) to correct a malfunction on one of the two redundant transfer headers, or (b) to manually line up the valves of the two headers into one path that will transfer fuel oil.

The DCP licensing basis requires that each DG day tank shall maintain a usable volume of fuel oil sufficient for a nominal 1-hour of DG operation assuming the fuel oil consumption of the DG running at full load. For purposes of fuel oil day tank capacity calculations, full load operation is a load that bounds the maximum post-accident loading. The minimum volume is obtained by considering: DG operation at full load for 60 minutes plus margin, the bounding fuel oil consumption rate, minimum acceptable fuel oil quality, potential DG degradation, unusable tank volume, and fuel oil density. The bounding fuel oil consumption rate for the DGs is 0.537 pound/kW-hour, increased by a factor of 1.08 to account for the reduced heating value of ultra-low sulfur fuel, and for changes in fuel grade and engine performance. The consumption rate was determined based upon test data of specific fuel oil consumption for each of the diesel generators during DCP startup.

3.4 Licensee's Proposed TS Changes

Current SR 3.8.1.2 states, in part:

Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

Revised SR 3.8.1.2 would state, in part:

Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz.

Current SR 3.8.1.3 states, in part:

Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2340 kW and ≤ 2600 kW.

Revised SR 3.8.1.3 would state, in part:

Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load of 2860 kW (nominal) and DG cooling system functions within design limits.

Current SR 3.8.1.4 states:

Verify each day tank contains ≥ 250 gal of fuel oil.

Revised SR 3.8.1.4 would state:

Verify each day tank contains a usable volume of ≥ 258 gal of fuel oil.

Current SR 3.8.1.7 states, in part:

- b. Steady state voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

Revised SR 3.8.1.7 would state, in part:

- b. Steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz.

Current 3.8.1.9 states, in part:

- b. Within 2.4 seconds following load rejection, the voltage is ≥ 3785 V and ≤ 4400 V; and
- c. Within 2.4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.

Revised 3.8.1.9 would state, in part:

- b. Within 1.6 seconds following load rejection, the voltage is ≥ 3785 V and ≤ 4400 V; and
- c. Within 1.6 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.

Current 3.8.1.10 states:

Verify each DG operating at a power factor ≤ 0.87 does not trip and voltage is maintained ≤ 5075 V during and following a load rejection of ≥ 2340 kW and ≤ 2600 kW.

Revised 3.8.1.10 would state:

-----NOTE-----

If performed with DG synchronized with offsite power, testing shall be performed at a power factor of ≤ 0.84 . However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

Verify each DG does not trip and voltage is maintained ≤ 5096 V during and following a load rejection of 2860 kW (nominal).

Current SR 3.8.1.11.c states, in part:

3. maintains steady state voltage ≥ 3785 V and ≤ 4400 V,
4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and

Revised SR 3.8.1.11.c would state, in part:

3. maintains steady state voltage ≥ 3980 V and ≤ 4340 V,
4. maintains steady state frequency ≥ 59.2 Hz and ≤ 60.8 Hz; and

Current SR 3.8.1.12 states, in part:

- b. Achieves steady state voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz;

Revised SR 3.8.1.12 would state, in part:

- b. Achieves steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz;

Current SR 3.8.1.14 states:

-----NOTES-----

1. Momentary transients outside the load and power factor ranges do not invalidate this test.

Verify each DG operating at a power factor ≤ 0.87 operates for ≥ 24 hours:

- a. For ≥ 2 hours loaded at 2600 kW and ≤ 2860 kW; and
- b. For the remaining hours of the test loaded at ≥ 2340 kW and ≤ 2600 kW.

Revised SR 3.8.1.14 would state:

-----NOTES-----

1. Momentary transients outside the load and power factor ranges do not invalidate this test.
2. If performed with DG synchronized with offsite power, testing shall be performed at a power factor ≤ 0.84 . However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable.

Verify each DG operates for ≥ 24 hours:

- a. For ≥ 2 hours loaded at 2860 kW (nominal); and
- b. For the remaining hours of the test loaded at 2750 kW (nominal); and
- c. Verify DG cooling system functions within design limits.

Current SR 3.8.1.15 states:

-----NOTES-----

1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded at 2340 kW and ≤ 2600 kW.

Momentary transients outside of load range do not invalidate this test.

2. All DG starts may be preceded by an engine prelube period.
-

Verify each DG starts and achieves:

- a. In ≤ 10 seconds, voltage ≥ 3785 V and frequency ≥ 58.8 Hz; and
- b. Steady state voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

Revised SR 3.8.1.15 would state:

-----NOTES-----

1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded at 2750 kW (nominal).

Momentary transients outside of load range do not invalidate this test.

2. All DG starts may be preceded by an engine prelube period.
-

Verify each DG starts and achieves:

- a. In ≤ 10 seconds, voltage ≥ 3785 V and frequency ≥ 58.8 Hz; and
- b. Steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz.

Current SR 3.8.1.19.c states, in part:

3. achieves steady state voltage ≥ 3785 V and ≤ 4400 V,
4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and

Revised SR 3.8.1.19.c would state, in part:

3. achieves steady state voltage ≥ 3980 V and ≤ 4340 V,
4. achieves steady state frequency ≥ 59.2 Hz and ≤ 60.8 Hz, and

Current SR 3.8.1.20 states, in part:

- b. Steady state voltage ≥ 3785 V and ≤ 4400 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.

Revised SR 3.8.1.20 would state, in part:

- b. Steady state voltage ≥ 3980 V and ≤ 4340 V, and frequency ≥ 59.2 Hz and ≤ 60.8 Hz.

3.5 NRC Staff Evaluation

In May 2008, the NRC Resident Inspector determined that loading the DGs to less than or equal to their continuous ratings using the conservatively estimated total loads needed to be powered at any one time at TS maximum voltage and frequency is no longer achievable (NRC Temporary Instruction 2515/176, "Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing," dated May 16, 2008; ADAMS Accession No. ML080420064). As a result, PG&E performed an operability evaluation and concluded that the DGs were capable of performing their intended safety function and remained operable. PG&E also initiated a DG load study analysis to evaluate Class 1E 4160 V ESF bus loading under various design-basis accident scenarios. The results of the DG load study analysis showed that the current TS SR DG test load band values, steady state frequency and voltage bands, PF, and DG day tank surveillance requirement volume would need to be changed.

Also during the investigation, PG&E stated that the DG 30-minute rating was 3056 kW instead of 3250 kW (as documented in Attachment 4 of LAR, UFSAR Section 8.3.1.1.6.3.13). This reduced the limit on predicted loads, specified by Safety Guide 9, RP C.2, from 2750 kW (the 2000-hour/year rating) to 2700 kW (90 percent of the 30-minute rating).

During the August 2013 NRC Component Design Bases Inspection, the NRC staff found that the impact of the combustion air inlet temperature on the vendor-specified DG rating had not been evaluated in the DG load study analysis. In addition, the available combustion air temperature for the maximum site outside air conditions was not evaluated, which could have affected the capability of safety related equipment to respond to initiating events. The proposed amendment addresses these issues.

The NRC staff reviewed and evaluated each of the proposed changes to the DCPD TSs as follows.

3.5.1 SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 - Revision to Change the Allowable Steady State DG Operating Voltage and Frequency Bands

SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 proposed revision to change the allowable steady state DG operating voltage and frequency bands include the following changes:

- from greater than or equal to (\geq) 58.8 Hz and less than or equal to (\leq) 61.2 Hz to ≥ 59.2 Hz and ≤ 60.8 Hz.
- from ≥ 3785 V and ≤ 4400 V to ≥ 3980 V and ≤ 4340 V.

Evaluation

The licensee stated that the proposed changes to these DG TS surveillances are in response to the RG 1.108, Revision 1, RP C.2.c.(1), C.2.a.(1), C.2.a.(2), C.2.a.(5) and C.2.b requirements to "verify that voltage and frequency are maintained within required limits." The current SR contains non-conservative allowable steady state voltage and frequency bands of 3785 V to 4400 V and 58.8 Hz to 61.2 Hz, respectively.

The licensee's DG load study analysis showed that the proposed SRs contain more restrictive steady state voltage and frequency bands. The specified minimum steady state voltage of 3980 V is 95.7 percent of the nominal 4160 V output voltage and 240 V above the minimum utilization voltage specified in American National Standards Institute (ANSI) C84.1. The minimum steady state voltage on the Class 1E 4160 V buses ensures adequate 4160 V, 480 V and 120 V levels. The specified maximum steady state output voltage of 4340 V is less than the maximum operating voltage for 4000 V motors specified in ANSI C84.1 (4400 V). The maximum steady state output voltage ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages.

In addition, the licensee's DG load study analysis showed that the steady state frequency band proposed corresponds to ± 1.33 percent of the nominal 60 Hz frequency.

The licensee also added that voltage and frequency instrument uncertainties during testing are addressed in the surveillance procedures, and that the proposed SRs are consistent with the recommendations in RG 1.9, Revision 3.

By letter dated April 29, 2015, in response to an NRC staff request for additional information (RAI) dated March 25, 2015 (ADAMS Accession No. ML15089A155), the licensee stated that the stored diesel fuel oil volume requirements specified in TS 3.8.3 A and B remain valid for the proposed DG loading requirements as a result of the variations in the DG frequency and voltage. The licensee's calculation that demonstrates that TS 3.8.3 A and B remain valid was revised in support of this proposed LAR. The revision incorporated the electrical load values

from the DG load study analysis. The electrical loading values assumed a worst-case bus loading frequency of 60.8 Hz and voltage of 4340 V. The fuel oil consumption values determined by this calculation were based on the DG loads defined in the TS Bases and the UFSAR. The analysis demonstrated that all TS requirements for the DG fuel oil inventory are met and margins are maintained. The NRC staff concludes that the licensee's RAI response is acceptable.

The NRC staff determined that the modified SRs satisfy the RG 1.108, Revision 1, and RG 1.9, Revision 3, as described below and are acceptable.

SR 3.8.1.2 (start-test) and SR 3.8.1.7 (fast-start test) demonstrate conformance to RG 1.108, Revision 1, RP C.2.c.(1). SR 3.8.1.11 (start-up operation) conforms to RG 1.108, Revision 1, RP C.2.a.(1). SR 3.8.1.12 (proper design accident loading sequence) conforms to RG 1.108, Revision 1, RP C.2.a.(2).

SR 3.8.1.15 (DG hot restart guidelines) is an exception, which was approved by the NRC staff earlier in License Amendment No. 105 to Facility Operating License No. DPR-80 and Amendment No. 104 to Facility Operating License No. DPR-82 for DCP, Unit Nos. 1 and 2, respectively, dated June 26, 1995 (ADAMS Accession No. ML022340432).

SR 3.8.1.19 (Safety Injection Actuation Signal and Loss of Power test) is not required per RG 1.108, Revision 1. This was added in the Improved Standard Technical Specification (ISTS),¹ and is consistent with the RG 1.9, Revision 3, RP 2.2.6.

SR 3.8.1.20 (redundant units start to identify common failure modes) is in response to RG 1.108, Revision 1, RP C.2.b.

As part of its evaluation, the NRC staff reviewed the licensee's description and summary of results for the DG load study analysis. The licensee has demonstrated that the allowable steady state DG operating voltage and frequency bands are more conservative and conform to RG 1.9, Revision 3. Based on the above, the NRC staff concludes that there is reasonable assurance that safe plant conditions will continue to be maintained and, therefore, the proposed change is acceptable.

3.5.2 SR 3.8.1.3 - Revision to Change the DG Test Loading Criterion

SR 3.8.1.3 DG test load band values will be revised from ≥ 2340 kW and ≤ 2600 kW to 2860 kW (nominal) for the 1-hour full load carrying capability test interval to satisfy RG 1.108, Revision 1, RP C.2.c.(2).

Evaluation

The licensee has identified that the current test load band of this surveillance, corresponding to 90 and 100 percent of the DG continuous rating, does not satisfy RG 1.108, Revision 1, RP C.2.c.(2), and it is therefore non-conservative. The load band was adopted as part of the

¹ NUREG-1431, Revision 4, Volume 1, "Standard Technical Specifications – Westinghouse Plants: Specifications," April 2012 (ADAMS Accession No. ML12100A222).

conversion to the ISTS, which are based upon RG 1.9, Revision 3. The current SR 3.8.1.3 also does not include verification that the DG cooling system functions within design limits, which is RG 1.108, Revision 1 guidance. The licensee performed a DG load study analysis that showed that steady state loading of the DGs under worst-case conditions of output voltage, frequency and power factor following a postulated design-basis accident exceeds the DG continuous rating of 2600 kW. Based upon the results of the DG load study analysis, PG&E proposed a test load of 2860 kW (nominal) to demonstrate full-load-carrying capability. As indicated above, nominal means that the SR test values are based upon standard DG ratings less instrument uncertainty, a test band, and any engine derating required due to ambient conditions at the time of the test. The proposed test load criterion of 2860 kW (nominal) envelops the post-accident load and the DG continuous rating of 2600 kW. The licensee stated that this test load value will provide adequate assurance of the machine's ability to carry 100 percent of worst-case DG loading during a postulated design-basis accident, and would satisfy RG 1.108, Revision 1, RP C.2.c.(2).

Additionally, the licensee's proposed SR 3.8.1.3 contains verification that the DG cooling system functions within design limits, in order to fully follow RG 1.108, Revision 1, RP C.2.c.(2). As discussed in TS Bases, SR 3.8.1.3 contains manufacturer recommendations to maintain the jacket water outlet temperature less than 185 °F and the lube oil temperature less than 195 °F. The proposed SR changes follow RG 1.108, Revision 1, which is to demonstrate full-load carrying capability, and are consistent in comparison to RG 1.9, Revision 3.

As part of its evaluation, the NRC staff reviewed the licensee's description and summary of results for the DG load study analysis. The NRC staff's review of the DCPD DG load study analysis was limited to assessing the DCPD DG margins that were available considering design factors such as load size, loading sequence, and maximum operating temperature. The licensee also considered DG ratings less instrument uncertainty, a test band, and any engine derating required due to ambient conditions at the time of the test.

The proposed DG test load criterion envelops the worst-case loading and the DG continuous rating of 2600 kW. Since the proposed values are more conservative compared to the current values and are needed to ensure the safe operation of ESF equipment powered by the DGs, the NRC staff concludes that the proposed TS changes are acceptable.

3.5.3 SRs 3.8.1.3 and 3.8.1.14 - Revision to Add Verification of DG Cooling System Function

SRs 3.8.1.3 and 3.8.1.14 proposed revision will add verification of DG cooling system function to satisfy the guidance in RG 1.108, Revision 1, RPs C.2.c.(2) and C.2.a.(3), respectively.

Evaluation

The licensee's current SRs 3.8.1.3 and 3.8.1.14 do not include verification that the DG cooling system functions are within design limits, as specified in RG 1.108, Revision 1. The proposed addition to "verify DG cooling system functions within design limits" conforms to the guidance in RG 1.108, Revision 1.

Since the licensee's proposed addition mentioned above addresses the inconsistency between the current TS and the guidance in RG 1.108, Revision 1, RPs C.2.c.(2) and C.2.a.(3), the NRC staff concludes that the proposed changes to SRs 3.8.1.3 and 3.8.1.14 are acceptable.

3.5.4 SR 3.8.1.4 Revision to Change the DG Day Tank Surveillance Requirement Minimum Volume

SR 3.8.1.4 proposed revision will change the DG day tank surveillance requirement minimum volume from ≥ 250 gallons of fuel oil to a usable volume of ≥ 258 gallons of fuel oil.

Evaluation

The licensee stated that the current SR 3.8.1.4 verifies that the diesel fuel oil stored in the day tank is equal to or greater than 250 gallons, which is non-conservative. Per the Surveillance Frequency Control Program, this surveillance is performed every 31 days. Analyses demonstrate that the DG day tank usable minimum volume of 258 gallons supports DG operation at 2750 kW plus margin to maintain 60 minutes of operation. This volume supports DG operation, which is sufficient to supply the DG loading at 2750 kW of the Class 1 E 4160 V ESF buses under worst-case conditions of voltage (4340 V) and frequency (60.8 Hz) for 60 minutes following a postulated design-basis accident.

SR 3.8.1.4 is revised to verify that each day tank contains a usable volume of ≥ 258 gallon of fuel oil. This bounds the required volume determined by the updated design calculation. SR 3.8.1.4 is not required by RG 1.108, Revision 1 or RG 1.9, Revision 3. This requirement was an LCO that was converted to an SR as part of the conversion to the ISTS.

By letter dated February 19, 2015, in response to the NRC staff's RAI dated January 29, 2015 (ADAMS Accession No. ML15029A664), the licensee stated that the proposed usable fuel oil volume in each day tank is based on the DG fuel consumption at a load of 2750 kW plus 10 percent margin. The continuous rating of each DCPD DG is 2600 kW. This proposed usable volume meets the requirement of ANSI N195-1976. ANSI N195-1976 states that the day tank shall have a minimum capacity for 60 minutes of DG operation, and the capacity is based on the fuel oil consumption at a load of 100 percent of the continuous rating of the DG plus a minimum margin of 10 percent. Based on the above, the NRC staff concludes that the proposed revision to SR 3.8.1.4 is acceptable.

3.5.5 SR 3.8.1.9 Revision to Revise the Voltage and Frequency Recovery Timing Requirement

SR 3.8.1.9 proposed revision changes the time requirement for voltage and frequency recovery following rejection of the largest single load from 2.4 seconds to 1.6 seconds consistent with Safety Guide 9.

Evaluation

The licensee's proposed change to SR 3.8.1.9 is in response to the RG 1.108, Revision 1, RP C.2.a.(4) guidance to "demonstrate proper operation during DG load shedding, including a test of the loss of the largest single load and of complete loss of load, and verify that the voltage

requirements are met and that the overspeed limits are not exceeded.” The current SR 3.8.1.9 time requirement for voltage and frequency recovery following rejection of the largest single load of 2.4 seconds does not conform to Safety Guide 9, RP C.4. This regulatory position states that voltage should be restored to within 10 percent of nominal and frequency should be restored to within 2 percent of nominal in less than 40 percent of each load sequence time interval. The proposed SR 3.8.1.9 includes a revised requirement to confirm that within 1.6 seconds following load rejection, the voltage is ≥ 3785 V and ≤ 4400 V and the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz, which conforms to Safety Guide 9, RP C.4. The licensee stated that since the surveillance demonstrates the transient response of DG voltage and frequency recovery, no change to current SR 3.8.1.9 voltage (≥ 3785 V and ≤ 4400 V) or frequency (≥ 58.8 Hz and ≤ 61.2 Hz) bands was proposed.

The NRC staff reviewed the licensee’s evaluation by applying Safety Guide 9 to the time requirement for voltage and frequency recovery following rejection of the largest single load. The licensee has demonstrated that the proposed time requirement for voltage and frequency recovery following rejection of the largest single load is consistent with Safety Guide 9, and is more conservative than the RG 1.9, Revision 3 guidance criteria. Therefore, the NRC staff concludes that the proposed TS change to SR 3.8.1.9 is acceptable.

3.5.6 SR 3.8.1.10 - Revision to Change the DG Full-Load Rejection Test Loading Criterion and Voltage Limit

The licensee’s proposed SR 3.8.1.10 revision will change the DG test load band values from ≥ 2340 kW and ≤ 2600 kW to 2860 kW (nominal) for the load rejection test to address RG 1.108, Revision 1, RP C.2.a.(4). Also, the voltage limit following a load rejection is revised from 5075 V to 5096 V.

Evaluation

The current SR 3.8.1.10 contains a requirement to verify each DG does not trip and voltage is maintained ≤ 5075 V during and following a DG full-load rejection test load band of ≥ 2340 kW and ≤ 2600 kW.

The licensee showed via the results of the DG load study analysis that the maximum steady state loading of the DGs under worst-case output voltage and frequency following a postulated design-basis accident is 2663 kW. The licensee determined that in order to follow RG 1.108, Revision 1, RP C.2.a.(4), the test load must be higher than 2663 kW, and that the proposed SR 3.8.1.10 test loading value of 2860 kW (nominal) would ensure that a test is performed that represents a complete loss of load without exceeding the 2-hour DG rating. The licensee also noted that as a result of increasing the load rejection test load to 2860 kW (nominal), DCCP had to also propose revising the voltage limit in SR 3.8.1.10 from 5075 V to 5096 V since the voltage limit of 5075 V was based upon a load rejection from 2600 kW with a PF of 0.8 (maximum continuous rating of the DG). The DG specification required that the DG package must support a load rejection of 110 percent of rated load (2860 kW) at a PF of 0.8 without causing a DG trip or damage to equipment. The licensee concluded that the 5096 V limit is considered a safe voltage and will not result in any adverse effect on the equipment or DG controls.

The NRC staff reviewed the licensee's description and summary of results for the DG load study analysis. Following the review of the information provided by the licensee, in an RAI dated March 25, 2015, the NRC staff requested that the licensee explain why the new voltage limit of 5096 V is acceptable such that no components, including the generator, will be adversely affected, damaged or tripped. In its RAI response letter dated April 29, 2015, the licensee explained that during the elevated voltage portion of this test (i.e., post load rejection), all end utilization equipment is inherently protected because the bus is not connected to the DG. The components subjected to the subsequent voltage increase are those between the generator and the output circuit breaker. The SR 3.8.1.10 acceptance criterion of 5096 V is derived from the generator open circuit saturation curve corresponding to a load of 2860 kW. The generator is capable of operating at the open circuit (or no load) voltage when operating within the load rating of the generator. The licensee concluded that the 5096 V limit is considered a safe voltage and will not result in any adverse effect on the equipment or controls.

The licensee has provided sufficient technical basis to support the proposed new voltage limit of 5096 V, and demonstrated that the proposed SR changes follow RG 1.108, Revision 1, and are consistent in comparison to RG 1.9, Revision 3 for full-load rejection tests. The proposed change for SR 3.8.1.10 test loading value of 2860 kW offers a margin above the maximum steady state loading of the DGs under worst-case output voltage and frequency following a postulated design-basis accident. Based on the above, the NRC staff concludes that the change is acceptable since the test performed will represent a complete loss of load without exceeding the 2-hour DG rating.

3.5.7 SR 3.8.1.14 - Revision to Change the DG 24-Hour Test Loading Criteria

SR 3.8.1.14 proposed revision will change the DG test load band values to address RG 1.108, Revision 1, RP C.2.a.(3):

- from ≥ 2600 kW and ≤ 2860 kW to 2860 kW (nominal) for the 2-hour of 24-hour endurance test.
- from ≥ 2340 kW and ≤ 2600 kW to 2750 kW (nominal) for the 22-hour of 24-hour endurance test.

Evaluation

The licensee stated that the current test load bands of this surveillance, which are non-conservative, were developed as part of the conversion to the ISTS but do not satisfy RG 1.108, Revision 1, RP C.2.a.(3). The current test load band for the 2-hour portion of the surveillance corresponds to between 100 and 110 percent of the DG continuous rating. The test load band for the 22 hour portion of the surveillance corresponds to between 90 and 100 percent of the DG continuous rating.

For the proposed SR 3.8.1.14 revision, PG&E requested an exception to RG 1.108, Revision 1, RP C.2.a.(3). The licensee proposed a surveillance that will load the DG to the 2-hour rating of 2860 kW (nominal), which means 2860 kW less instrument uncertainty, a test band, and any engine derating required due to ambient conditions at the time of the test, instead of operating the DG at a load equivalent to the 2-hour rating. The surveillance will demonstrate that the DGs

have adequate margin at a test load greater than the maximum expected steady-state accident load at the worst-case conditions of voltage and frequency.

PG&E also proposed a test load of 2750 kW (nominal) for the remaining 22 hour portion of the DG 24-hour full-load-carrying capability test. Per RG 1.108, Revision 1, RP C.2.a.(3), the 22 hour test should be at a load equivalent to the continuous rating of the diesel generator. RG 1.9, Revision 3, RP 2.2.9, suggests testing for 22 hours at a load equal to 90 to 100 percent of its continuous rating. A load of 2750 kW less instrument uncertainty, a test band, and less temperature derate (but not less than the accident profile) is greater than the continuous rating and greater than 90 percent of the maximum accident load.

The NRC staff reviewed the licensee's proposed changes in light of the guidance in RG 1.108, Revision 1, RP C.2.a.(3). The proposed exception to RG 1.108, Revision 1, RP C.2.a.(3), with respect to the 2-hour period of the 24-hour endurance test is acceptable since the DGs will have adequate margin at a test load greater than the maximum expected steady state accident load at the worst-case conditions of voltage and frequency. The NRC staff concludes that the proposed change regarding RG 1.108, Revision 1, RP C.2.a.(3), with respect to the 22-hour period of the 24-hour endurance test, is acceptable since the load of 2750 kW less instrument uncertainty, a test band, and less temperature derate is greater than the continuous rating and greater than 90 percent of the maximum accident load.

3.5.8 SR 3.8.1.15 - Revision to Change the DG Test Prerequisite Loading Criterion

The licensee's proposed SR 3.8.1.15 revision will change the DG test prerequisite loading criterion from ≥ 2340 kW and ≤ 2600 kW to 2750 kW (nominal).

Evaluation

The licensee stated that the proposed change to SR 3.8.1.15 is in response to the RG 1.108, Revision 1, RP C.2.a.(5) to "demonstrate functional capability at full-load temperature conditions by rerunning the test phase outlined in RPs C.2.a.(1) and (2) immediately following (3)." The licensee added that the current SR 3.8.1.15 contains Note 1, which requires the surveillance to be performed after the DG has operated in a test load band of ≥ 2340 kW and ≤ 2600 kW for ≥ 2 hours. This surveillance satisfies RG 1.108, Revision 1, RP C.2.a.(5) in part, which states the DG must demonstrate functional hot restart capability at full-load temperature conditions. The licensee clarified that the prerequisite test load band corresponds to between 90 and 100 percent of the DG continuous rating. The licensee concluded that the test load band will ensure the hot restart functional capability test will be performed at temperature conditions corresponding to DG loading that exceeds the maximum steady state accident loading at worst-case conditions of frequency and voltage.

The licensee stated that the proposed SR 3.8.1.15 modifies Note 1 to require the surveillance to be performed within 5 minutes of shutting down after the DG has previously operated at a test load of 2750 kW (nominal) for ≥ 2 hours. The licensee concluded that this test loading value will ensure the hot restart functional capability test is performed at temperature conditions corresponding to DG loading that exceeds the maximum steady state accident loading at worst-case conditions of frequency and voltage.

The NRC staff reviewed the licensee's proposed changes in light of the guidance in RG 1.108, Revision 1, RP C.2.a.(5). Since the proposed test complies with RG 1.108, Revision 1, as modified by the approved exception and is consistent in comparison to RG 1.9, Revision 3, the NRC staff concludes that this proposed change to SR 3.8.1.15 is acceptable.

3.5.9 SRs 3.8.1.10 and 3.8.1.14 - Revision to Add a New Note in Regard to Reducing the SR Minimum DG Operating PF with the Stipulation that PF Limit Requirements are not Required If Grid Conditions do not Permit

The licensee's proposed revision to SRs 3.8.1.10 and 3.8.1.14 will add a new note to reduce the SR minimum DG operating PF from ≤ 0.87 to ≤ 0.84 with the stipulation that PF limit requirements are not required if grid conditions do not permit, but under this condition, the PF shall be maintained as close to 0.84 as practicable.

Evaluation

The current SRs 3.8.1.10 and 3.8.1.14 contain a voltage level requirement of ≤ 5075 V and test load band of ≥ 2340 kW and ≤ 2600 kW. Both SRs are silent about PF limit requirements.

The licensee stated that the results of the DG load study analysis determined that the DG PF during maximum steady state loading of the DGs under worst-case output voltage and frequency following a postulated design-basis accident is approximately 0.84. The licensee determined that the current 0.87 value in SR 3.8.1.10 is non-conservative. The proposed SR contains a new note, which requires that if the DG full-load rejection test is performed with the DG synchronized with offsite power it shall be performed at a PF ≤ 0.84 . The new note also states that if grid conditions do not permit, the PF limit is not required to be met and the PF shall be maintained as close to the limit as practicable; the new note ensures that the DG is tested under load conditions that are as close to design-basis conditions as practicable. The licensee also noted that recent surveillance test results have demonstrated that a PF of less than 0.84 can be achieved for all DGs. The licensee clarified that additional guidance will be provided in the surveillance procedures as part of implementation of the license amendment to provide guidance to the operators on use of the new note added to SR 3.8.1.10.

The NRC staff reviewed the licensee's description and summary of results for the DG load study analysis in light of the DG operating PF. The NRC staff concludes that the proposed change to 0.84 is acceptable since it has been supported by the DG load study analysis and is more conservative than the current DG operating PF. Also, the NRC staff evaluated the proposed note regarding the PF limit requirements not being required if grid conditions do not permit. The NRC staff concludes that the addition of the note is acceptable since the conditions of the grid are outside the licensee's control and the licensee has committed to maintain the PF as close to 0.84 as practicable.

3.5.10 Exception to RG 1.108, Revision 1

The licensee is requesting an exception to RG 1.108, Revision 1, RP C.2.a.(3) to revise the DG test load values from ≥ 2600 kW and ≤ 2860 kW to 2860 kW (nominal) for the 2-hour portion of SR 3.8.1.14. Nominal is defined as the SR load value less instrument uncertainty, a test band,

and any engine derating required due to ambient conditions at the time of the test. Since the proposed test load value for the 2-hour portion of SR 3.8.1.14 is less than the 2-hour rating as provided in RG 1.108, Revision 1, RP C.2.a.(3), an exception is requested.

Evaluation

As discussed in Section 3.5.7 of this safety evaluation, the NRC staff reviewed the licensee's proposed changes in light of the guidance in RG 1.108, Revision 1, RP C.2.a.(3). The proposed exception to RG 1.108, Revision 1, RP C.2.a.(3), with respect to the 2-hour period of the 24-hour endurance test is acceptable since the DGs will have adequate margin at a test load greater than the maximum expected steady state accident load at the worst-case conditions of voltage and frequency.

3.5.11 Summary

The NRC staff has reviewed the licensee's proposed TS changes and supporting documentation. Based on the evaluation discussed above, the NRC staff determined that the proposed amendments to the TS 3.8.1, "AC Sources - Operating," for DG testing, are consistent with the requirements in 10 CFR Part 50, Appendix A, GDC 17 and GDC 18, and Sections 50.36, and 50.65. Therefore, the NRC staff concludes that the proposed changes are acceptable and consistent with the NRC regulations.

4.0 PUBLIC COMMENTS

As discussed in Section 1.0 of this safety evaluation, the NRC staff published a public notice in the *Federal Register* on August 19, 2014 (79 FR 49109), which included the NRC staff's proposed no significant hazards consideration determination. The notice also provided an opportunity for public comment until September 18, 2014, regarding the staff's proposed no significant hazards consideration determination.

A public comment was received regarding the proposed amendment. Specifically, Mr. Caleb Laieski provided a comment in NRC Docket ID NRC-2014-0189 at www.regulations.gov (ADAMS Accession No. ML14252A137).

Consistent with the requirements in 10 CFR 50.91(a)(2)(ii), and as noted above, the NRC staff's public notice solicited comments specifically on the proposed no significant hazards consideration determination. Mr. Laieski provided comments pertaining to DCPD that were not related to the NRC staff's proposed no significant hazards consideration determination or the proposed amendment. Therefore, the NRC staff notes that to the extent that Mr. Laieski believes that DCPD is operating unsafely, he can request that the Commission institute a proceeding pursuant to 10 CFR 2.206(a) to modify, suspend, or revoke a license, or for any other action as may be proper.

5.0 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.

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, 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 August 19, 2014 (79 FR 49109). 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.

7.0 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 Contributors: T. Martinez-Navedo, NRR
S. Som, NRR
R. Wolfgang, NRR

Date: July 1, 2015

E. Halpin

- 2 -

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/

Siva P. Lingam, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosures:

1. Amendment No. 218 to DPR-80
2. Amendment No. 220 to DPR-82
3. Safety Evaluation

DISTRIBUTION:

PUBLIC

LPL4-1 Reading

RidsAcrsAcnw_MailCTR Resource

RidsNrrDeEeeb Resource

RidsNrrDeEpnb Resource

RidsNrrDorlDpr Resource

RidsNrrDorlLpl4-1 Resource

RidsNrrDssStsb Resource

RidsNrrLAJBurkhardt Resource

RidsNrrPMDiabloCanyon Resource

RidsRgn4MailCenter Resource

TMartinez-Navedo, NRR/DE/EEEB

SSom, NRR/DE/EEEB

RWolfgang, NRR/DE/EPNB

ADAMS Accession No. ML15162A882

*via memo including EPNB input

OFFICE	NRR/DORL/LPL4-1/PM	NRR/DORL/LPL4-1/LA	NRR/DE/EEEB/BC	NRR/DSS/STSB/BC
NAME	SLingam	JBurkhardt	JZimmerman*	RElliott
DATE	6/17/15	6/16/15	6/9/15	6/29/15
OFFICE	OGC – NLO	NRR/DORL/LPL4-1/BC	NRR/DORL/LPL4-1/PM	
NAME	SUttal	MMarkley LRegner for)	SLingam	
DATE	6/21/15	7/1/15	7/1/15	

OFFICIAL RECORD COPY