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April 9, 2020

PG&E Letter DCL-20-023

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

10 CFR 50.73

Docket No. 50-323, OL-DPR-82
Diablo Canyon Power Plant, Unit 2
Unit 2 Licensee Event Report 2020-001-00, Unit 2 Shutdown Required by Technical Specifications

Dear Commissioners and Staff,

In accordance with the requirements of 10 CFR 50.73(a)(2)(i)(A), Pacific Gas and Electric Company (PG&E) hereby submits the enclosed Diablo Canyon Power Plant (DCPP) Unit 2 Licensee Event Report regarding a Technical Specification required shutdown due to control rod misalignment.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this report. All corrective actions identified in this letter will be implemented in accordance with the DCPP Corrective Action Program.

This event did not adversely affect the health and safety of the public.

Sincerely,

A. Peck for
Paula Gerfen

dqmg/51067154
Enclosure
cc/enc: Scott A. Morris, NRC Region IV Administrator
Christopher W. Newport, NRC Senior Resident Inspector
Balwant K. Singal, NRR Senior Project Manager
INPO
Diablo Distribution

NRC FORM 366 (04-2018) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name	2. Docket Number	3. Page
Diablo Canyon Power Plant, Unit 2	05000323	1 OF 4

4. Title
Unit 2 Shutdown Required by Technical Specifications

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
										05000
02	13	2020	2020	- 001	- 00	04	9	2020	Facility Name	Docket Number
										05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☒ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(iii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
David Madsen	805-545-6192

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable To ICES	Cause	System	Component	Manufacturer	Reportable To ICES
X	AA	CARD	WEC	Y					

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On February 13, 2020, at 1025 hours Pacific Standard Time, during the performance of the quarterly control rod exercise surveillance test, Shutdown Bank "B" Group 1 became misaligned greater than 12 steps from its group demand position. In accordance with Technical Specification 3.1.4, "Rod Group Alignment Limits," Action D, a Unit 2 shutdown to Mode 3 was commenced at 1233 hours. The shutdown to Mode 3 was completed February 13, 2020, at 1545 hours.

This event is being reported per 10 CFR 50.73(a)(2)(i)(A) as the completion of any nuclear plant shutdown required by the plant's Technical Specifications.

This event was a result of rod misalignment caused by a failure of a slave cycler decoder lift card to provide proper timing signals.

There was no impact on the health and safety of the public or plant personnel.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Diablo Canyon Power Plant, Unit 2	05000-323	2020	- 001	- 00

NARRATIVE

I. Reportable Event Classification

This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(A) and the associated guidance of NUREG-1022, Revision 3, as the completion of any nuclear plant shutdown required by the plant's Technical Specifications (TS).

Event Notification 54524 also reported this event in accordance with 10 CFR 50.72(b)(3)(ii)(B), as a potential unanalyzed condition that may have degraded plant safety. However, during the shutdown, Shutdown Margin was maintained, Axial Flux Difference remained within the TS required band, and Control Bank D remained above TS insertion limits. Therefore, this event did not represent an unanalyzed condition that significantly degraded plant safety, and the reporting criterion of 10 CFR 50.73(a)(2)(ii)(B) is not applicable. All control and shutdown rods remained operable at all times.

II. Plant Conditions

At the time of the event, Diablo Canyon Power Plant (DCPP) Unit 2 was in Mode 1 at 100 percent power.

III. Problem Description

A. Background

The purpose of the Control Rods is to provide a means to control reactivity and shutdown the reactor. They are used to control reactor power and maintain adequate Shutdown Margin.

Control rods are moved by their control rod drive mechanisms (CRDMs). Each CRDM moves its control rod 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 rods are divided among four control banks (CB) and four shutdown banks (SBs). Each bank may be further subdivided into two groups to provide for precise reactivity control. A group consists of two or more Rod Control Cluster Assemblies that are electrically paralleled to step simultaneously and are moved in a staggered fashion, but always within one step of each other. All CBs contain two rod groups. Two SBs (A and B) contain two rod groups and the remaining two SBs (C and D) contain one rod group.

The purpose of the Logic Cabinet is to translate the speed and direction signals into current orders which control the operation of the power cabinet. The Logic Cabinet orders the Power Cabinets to supply current in a precisely timed sequence.

The Power Cabinets receive current orders from the logic cabinet and deliver DC current pulses to the selected CRDM coils. The order and timing of these pulses dictates whether a control rod is withdrawn or inserted in the core.

The Slave Cycler Decoder cards are part of a functional grouping of circuit cards within the Logic Cabinet, referred to as a Slave Cycler. Each Slave Cycler interprets inputs and develops the pulsed Current Order signals used by the Power Cabinets to control CRDM coil currents. There are 5 Slave Cyclers in the Logic Cabinet, one for each power cabinet.

B. Event Description

On February 13, 2020, at 1025 hours, during the performance of the Unit 2 quarterly control rod exercise surveillance test, Shutdown Bank B Group 1 rods became misaligned greater than 12 steps from their group demand position. In accordance with

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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Diablo Canyon Power Plant, Unit 2	05000-323	2020	- 001	- 00

TS 3.1.4, "Rod Group Alignment Limits," Action D, a shutdown to Mode 3 (required within 6 hours) was commenced at 1233 hours. While ramping the unit to Mode 3, an existing issue with Main Feedwater Regulating Valve FCV-510 resulted in temporarily placing the ramp on hold. In order to maintain T-ave, the control system withdrew Control Bank D to respond to the T-ave / power mis-match. When Bank D moved out, Group 1 did not respond to the rods out demand while Group 2 responded appropriately. This caused Control Bank D to be misaligned. The shutdown ramp was recommenced; however, was temporarily placed on hold again due to main generator stator cooling water delta temperature. Unit 2 was subsequently shut down and Mode 3 was entered at 1545 hours.

Following the shutdown, Maintenance investigation into the cause of the rod misalignment determined that Unit 2 A410 Slave Cycler Decoder Lift card had functioned incorrectly during the surveillance test and shutdown, which resulted in incorrect timing signals to be sent to the affected rods. The A410 Slave Cycler Decoder Lift card controls both Shutdown Bank B and Control Bank D. The Slave Cycler Decoder Lift card had been in service since May 2016 without any similar issues noted.

C. Status of Inoperable Structures, Systems or Components that Contributed to the Event

Except as noted above, other structures, systems, and components functioned properly during the event.

D. Other Systems or Secondary Systems Affected

No other systems or secondary systems were affected by the rod misalignment.

E. Method of Discovery

Self-identified. This condition was discovered during the quarterly control rod exercise surveillance testing.

F. Operator Actions

Upon discovery of the control rod mis-alignment during the performance of the quarterly surveillance test, TS 3.1.4, "Rod Group Alignment Limits," Action D, a Unit 2 shutdown to Mode 3 was commenced. Mode 3 was entered at 1545, and the associated TS were exited. The Operations crews responded to this event in accordance with plant operating procedures.

G. Safety System Responses

There were no safety system responses as a result of this event.

IV. Cause of the Problem

The cause of the rod misalignment was a result of the failure of the Unit 2 A410 Slave Cycler Decoder Lift card to provide proper timing signals.
Neither DCPP nor outside testing facility could reproduce the card anomaly in subsequent testing.

V. Assessment of Safety Consequences

There were no safety consequences as a result of this event. At no time was rod control unable to perform its intended safety function of inserting or tripping control rods

There was no impact on health and safety of the public or plant personnel.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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VI. Corrective Actions

The failed card has been replaced. Follow-up corrective actions to prevent recurrence will be managed in accordance with the DCPP Corrective Action Program.

VII. Additional Information

There have been no similar events at DCPP in the previous three years.