



December 18, 2017

PG&E Letter DCL-17-108

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

10 CFR 50.4
10 CFR 50.54(f)

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Power Plant Units 1 and 2
Spent Fuel Pool Evaluation Supplemental Report, Response to NRC Request for
Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the
Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

References:

1. NRC Letter, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012, ADAMS Accession Number ML12053A340
2. NRC Letter, "Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1 'Seismic' of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated October 27, 2015, ADAMS Accession Number ML15194A015
3. NEI Letter, "Request for Endorsement of *Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation (EPRI 3002009564)*," dated January 31, 2017, ADAMS Accession Number ML17031A171
4. EPRI Technical Report No. 3002009564, "Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation," dated January 2017, ADAMS Accession Number ML17031A176
5. NRC Letter, "Endorsement of Electric Power Research Institute Report 3002009564, 'Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation,'" dated February 28, 2017, ADAMS Accession Number ML17034A408
6. PG&E Letter DCL-15-035, "Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding the Seismic Aspects of Recommendation 2.1 of the Near-Term Task Force Review of Insights from



the Fukushima Dai-ichi Accident: Seismic Hazard and Screening Report," March 11, 2015, ADAMS Accession Number ML15071A046

7. PG&E Letter DCL-15-154, "Response to NRC Request for Additional Information dated October 1, 2015, and November 13, 2015, Regarding Recommendation 2.1 of the Near-Term Task Force Seismic Hazard and Screening Report," December 21, 2015, ADAMS Accession Numbers ML15355A550 and ML15355A551
8. NRC Letter, "Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Staff Assessment of Information Provided under Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated December 21, 2016, ADAMS Accession Number ML16341C057

Dear Commissioners and Staff:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a Request for Information per 10 CFR 50.54(f) (Reference 1) to all power reactor licensees. By letter dated October 27, 2015 (Reference 2), the NRC transmitted final seismic information request tables which identified that Pacific Gas and Electric Company (PG&E) is to conduct a limited scope Spent Fuel Pool (SFP) Evaluation for the Diablo Canyon Power Plant (DCPP).

By Reference 3, the Nuclear Energy Institute (NEI) submitted the Electric Power Research Institute (EPRI) report entitled "Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation" (EPRI 3002009564) (Reference 4) for NRC review and endorsement. NRC endorsement was provided by Reference 5.

EPRI 3002009564 provides criteria for evaluating the seismic adequacy of a SFP to the reevaluated ground motion response spectrum hazard levels. Section 4.3 of EPRI 3002009564 lists the parameters to be verified to confirm that the results of the report are applicable to PG&E, and that the DCPP SFP is seismically adequate in accordance with the Near-Term Task Force (NTTF) Recommendation 2.1 Seismic evaluation criteria.

The enclosure to this letter provides the data for DCPP that confirm applicability of the EPRI 3002009564 criteria and confirm that the DCPP SFPs are seismically adequate in accordance with the NTTF Recommendation 2.1 Seismic evaluation criteria.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this letter.



If you have any questions or require additional information, please contact Mr. Hossein Hamzehee at 805-545-4720.

I have been delegated the authority of James A. Welsch, Vice President, Generation and Chief Nuclear Officer, during his absence. I state under penalty of perjury that the foregoing is true and correct.

Executed on December 18, 2017.

Sincerely,

Kenneth Cortese
Nuclear Industry Relations Manager, Chief

mjrm/50702923

Enclosure

cc: Diablo Distribution

cc/enc:

Brian E. Holian, NRC/NRR Director (Acting)
Kriss M. Kennedy, NRC Region IV Administrator
Christopher W. Newport, NRC Senior Resident Inspector
Balwant K. Singal, NRR Senior Project Manager
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Pacific Gas and Electric Company

Diablo Canyon Power Plant
Units 1 and 2

License Nos. OL-DPR-80 and OL-DPR-82

Site-Specific Spent Fuel Pool Criteria for the Diablo Canyon Power
Plant

Introduction

The 50.54(f) letter (Reference 1) requested that, in conjunction with the response to Near-Term Task Force (NTTF) Recommendation 2.1, a seismic evaluation be made of the spent fuel pool (SFP). More specifically, plants were asked to consider “all seismically induced failures that can lead to draining of the SFP.” Such an evaluation would be needed for any plant in which the ground motion response spectrum (GMRS) exceeds the safe shutdown earthquake¹ (SSE) in the 1 to 10 Hz frequency range. The staff confirmed through References 2 and 8 that the GMRS exceeds the SSE and concluded that a SFP evaluation is merited for the Diablo Canyon Power Plant (DCPP). By letter dated February 28, 2017 (Reference 5), the staff determined that EPRI 3002009564 was an acceptable approach for performing SFP evaluations considering the GMRS hazard levels.

Spent Fuel Pool Criteria for Diablo Canyon Power Plant

The table below lists the criteria from Section 4.3 of EPRI 3002009564 along with data for DCPP that confirm applicability of the EPRI 3002009564 criteria and confirm that the SFPs are seismically adequate in accordance with NTTF 2.1 Seismic evaluation criteria.

SFP Criteria from EPRI 3002009564	Site-Specific Data
Site Parameters	
1. The site-specific GMRS should be the same as that submitted to the NRC between March 2014 and July 2015, which the NRC has found acceptable for responding to the NRC 50.54(f) letter (Reference 8).	The DCPP GMRS used in the SFP evaluations (Reference 7, Table 6-1), is the same GMRS that was accepted by the NRC (Reference 8) Therefore, this criterion is met for DCPP.
Structural Parameters	
2. Site-specific calculations, performed in accordance with Section 4.1 of EPRI 3002009564 should demonstrate that the limiting SFP high consequence low probability failure (HCLPF) is greater than the site-specific GMRS in the frequency range of interest (e.g., 10-20 Hz).	Site-specific calculations (Reference 9), performed in accordance with Section 4.1 of EPRI 3002009564, demonstrates that the limiting SFP HCLPF is 3.5g, which is greater than the 5% damped spectral acceleration at 5 Hz from the site-specific GMRS (1.86g). Therefore, this criterion is met for DCPP.
3. The SFP structure should be included in the Civil Inspection Program performed in accordance with Maintenance Rule.	The Auxiliary Building, which houses the SFPs, is included in the DCPP Civil Inspection Program (Reference 10, Section 5.1.3). This program includes regular inspections in accordance with 10 CFR 50.65. Therefore, this criterion is met for DCPP.

¹ The Double Design Earthquake is equivalent to a Safe Shutdown Earthquake for DCPP.

SFP Criteria from EPRI 3002009564	Site-Specific Data
Non-Structural Parameters	
<p>4. To confirm applicability of the piping evaluation in Section 4.2 of EPRI 3002009564, piping attached to the SFP should have penetrations no more than 6 ft below water surface.</p>	<p>The piping attached to the SFPs is identified on Reference 11 (Unit 1) and Reference 12 (Unit 2). The SFP water surface is normally maintained at an elevation of 137'-8", but can range from 137'-4" to 139'-0" (Reference 13, Section 4.4.4.1). The elevations of the penetrations for the piping attached to the SFPs are in the range of 134'-0" to 138'-6" (References 14 & 15 (Unit 1) and 16 & 17 (Unit 2)), which are no more than 6' below the water surface.</p> <p>Therefore, this criterion is met for DCPP.</p>
<p>5. To confirm ductile behavior under increased seismic demands, SFP gates should be constructed from either aluminum or stainless steel alloys.</p>	<p>The SFP gates are constructed from a stainless steel alloy (Reference 18 and Note 8 on Reference 19).</p> <p>Therefore, this criterion is met for DCPP.</p>
<p>6. Anti-siphoning devices should be installed on any piping that could lead to siphoning water from the SFP. In addition, for any cases where active anti-siphoning devices are attached to 2-inch or smaller piping and have extremely large extended operators, the valves should be walked down to confirm adequate lateral support.</p>	<p>The piping attached to the SFPs is identified on Reference 11 (Unit 1) and Reference 12 (Unit 2). The only piping that is potentially susceptible to siphoning significant amounts of water from the SFPs are the return piping from the SFP Cooling Pumps (8" diameter Line No. 159) and the fill piping from the Hold-Up Tank Recirculation Pumps (3" diameter Line No. 1119).</p> <p>Passive anti-siphoning devices (i.e., holes) are provided in Line Nos. 159 and 1119. These features preclude the siphoning of water from the SFP. Walkdowns were performed to visually verify that the anti-siphon holes are present (References 20 (Unit 1) and 21 (Unit 2)).</p> <p>Therefore, this criterion is met for DCPP.</p>
<p>7. To confirm applicability of the sloshing evaluation in Section 4.2 of EPRI 3002009564, the maximum SFP horizontal dimension (length or width) should be less than 125 ft and the SFP depth should be greater than 36 ft.</p>	<p>The DCPP SFPs are 37'-3" long² and 35' wide (Reference 23 (Unit 1) and Reference 24 (Unit 2)), which are both less than 125'. The DCPP SFPs have a depth of 41' (Reference 24 (Units 1 & 2)), which is greater than 36'.</p> <p>Therefore, this criterion is met for DCPP.</p>

² Excluding the Fuel Transfer Canal (approximately 9').

SFP Criteria from EPRI 3002009564	Site-Specific Data
<p>8. To confirm applicability of the evaporation loss evaluation in Section 4.2 of EPRI 3002009564, the SFP surface area should be greater than 500 ft² and the licensed reactor core thermal power should be less than 4,000 MWt per unit.</p>	<p>The DCPP SFPs have a surface area of approximately 1,300 ft² (Reference 23 (Unit 1) and Reference 24 (Unit 2)), which is greater than 500 ft². The licensed reactor thermal power for DCPP is 3,411 MWt per unit (Reference 25, Section 1.1), which is less than 4,000 MWt per unit.</p> <p>Therefore, this criterion is met for DCPP.</p>

References

1. NRC Letter, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012, ADAMS Accession Number ML12053A340
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3. NEI Letter, "Request for Endorsement of *Seismic Evaluation Guidance: Spent Fuel Pool Integrity Evaluation (EPRI 3002009564)*," dated January 31, 2017, ADAMS Accession Number ML17031A171
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7. PG&E Letter DCL-15-154, "Response to NRC Request for Additional Information dated October 1, 2015, and November 13, 2015, Regarding Recommendation 2.1 of the Near-Term Task Force Seismic Hazard and Screening Report," December 21, 2015, ADAMS Accession Numbers ML15355A550 and ML15355A551
8. NRC Letter, "Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Staff Assessment of Information Provided under Title 10 of the Code of Federal Regulations Part 50,

Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident,” dated December 21, 2016, ADAMS Accession Number ML16341C057

9. PG&E Calculation No. 128027-CA-229, “High Confidence Low Probability of Failure Capacity Evaluation of the Spent Fuel Pool,” Revision 0
10. PG&E Departmental Administrative Procedure No. MA1.NE1, “Maintenance Rule Monitoring Program – Civil Implementation,” Revision 6
11. PG&E Drawing No. 102013, Sheet 2, “Unit 1 – Spent Fuel Pit Cooling System,” Revision 45
12. PG&E Drawing No. 108013, Sheet 2, “Unit 2 – Spent Fuel Pit Cooling System,” Revision 36
13. PG&E Design Criteria Memorandum No. S-13, “Spent Fuel Pool Cooling System,” Revision 31
14. PG&E Drawing No. 500086, “Unit 1 – Mechanical, Area J & L, Plan at El. 115’ – 0’,” Revision 16
15. PG&E Drawing No. 500129, “Unit 1 – Drainage & Fire Fighting – Auxiliary Bldg. Area J, Plan at El. 115’-0’,” Revision 12
16. PG&E Drawing No. 500936, “Unit 2 – Piping and Mechanical, Area J & L, Plan at El. 115’-0’,” Revision 9
17. PG&E Drawing No. 501002, “Unit 2 – Civil Drainage and Fire Fighting, Area J, Auxiliary Building, Plan at Elevation 115’-0’,” Revision 7
18. PG&E Drawing No. 439504, “Unit 1 & 2 - Civil Spent Fuel Pool Gate Details, Auxiliary Building – Area J,” Revision 10
19. PG&E Drawing No. 439501, “Unit 1 – Civil Plan & Details, Spent Fuel Pool Liner, Auxiliary Building – Area J,” Revision 13
20. PG&E Letter DCL-12-118, “Response to Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.3 Seismic Unit 1,” November 27, 2012, ADAMS Accession Numbers ML12333A268 and ML12333A266
21. PG&E Letter DCL-12-119, “Response to Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.3 Seismic Unit 2,” November 27, 2012, ADAMS Accession Numbers ML12333A270, ML12333A271, and ML12333A269
22. PG&E Drawing No. 438432, “Unit 1 – Civil Concrete Outline, Auxiliary Building, El. 115’-0’,” North Area J, GE, GW,” Revision 15
23. PG&E Drawing No. 439533, “Unit 2 – Civil Concrete Outline, Aux. Building, Elev. 115’-0’ – Area J, GW & GE,” Revision 10
24. PG&E Drawing No. 443490, “Units 1 & 2 - Concrete Outline, Section F3 – F3 & F4 – F4, Auxiliary Building – Areas J & GE,” Revision 8

25. PG&E, "DCPP Units 1 & 2 FSAR Update," Revision 23