October 6, 2014

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of:	)	
	)	
PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275-LR
	)	Docket No. 50-323-LR
	)	
(Diablo Canyon Power Plant, Units 1 and 2)	)	

DECLARATION OF MR. WILLIAM R. HORSTMAN IN SUPPORT OF PACIFIC GAS & ELECTRIC COMPANY'S ANSWER OPPOSING FRIENDS OF THE EARTH'S REQUEST FOR HEARING

Mr. William R. Horstman states as follows under penalty of perjury:

1. I am a Senior Consulting Civil Engineer at Pacific Gas & Electric Company's ("PG&E") Diablo Canyon Power Plant ("DCPP").

2. My educational background and qualifications include a B.S. in Civil Engineering from the University of California, Berkeley in 1979, and an M.S. in Structural Engineering and Structural Mechanics from the University of California, Berkeley in 1980. I am a registered Professional Engineer in the State of California, and a member of the American Society of Civil Engineers, the American Concrete Institute, and the Structural Engineers Association of Northern California. I have over 34 years of experience in the commercial nuclear power industry.

3. I began my career in 1980 as a civil and structural engineer with Cygna Energy Services, where I conducted seismic evaluations of various systems and consulted with various nuclear power plants on seismic design-related issues. In 1988, I became a Section Manager for the Engineering Mechanics Section of Cynga's Walnut Creek, CA, office, and later the Division Manager for the Engineering Division of Cynga's Walnut Creek office. From 1990 – 1996, I

was assigned as a consultant to PG&E's Civil/Architectural Engineering Group associated with DCPP, where I prepared and maintained Design Criteria Documents for the seismic analysis of structures and systems. I also conducted finite element modeling and seismic analyses of plant structures to determine the effects of physical modifications on member forces/stress, seismic response spectra, and seismic displacements. In 1996, I became a PG&E employee as a Senior Consulting Civil Engineer. From 1996-2010, I continued to work in PG&E's Civil/Architectural Engineering Group at DCPP, where I was the responsible engineer and subject matter expert for the wind, tornado, tsunami, and seismic design basis of major plant structures. In this capacity, I prepared engineering calculations, design drawings, and design changes to support plant modifications.

4. From 2010-2012, I completed a rotational assignment to the PG&E Senior Director of Engineering to address issues associated with the Shoreline Fault. I was a member of the team that developed a strategy to evaluate new and updated seismic information under the PG&E Long Term Seismic Program and prepared License Amendment Request 11-05 regarding new and updated seismic information. In addition, I interacted with the PG&E Geosciences Department on preparation of PG&E's January 2011 Shoreline Fault Report, and assisted the PG&E Manager of Project Engineering in the development of the formal Prompt Operability Assessment addressing the seismic safety implications of the Shoreline Fault.

5. Currently, I am a Senior Consulting Civil Engineer with PG&E's Seismic Engineering Group. My responsibilities include updating elements of the DCPP Probabilistic Seismic Hazards Assessment ("PSHA"); interacting with the PG&E Geosciences Department to update the DCPP seismic hazards evaluation; participating in DCPP's response to post-Fukushima NRC requirements; and supporting the DCPP Licensing Basis Verification Project.

6. I have reviewed the Friends of the Earth ("FOE") request for hearing on an alleged *de facto* license amendment of PG&E's operating license for DCPP.[1]

7. During the construction permit review for DCPP, 10 C.F.R. Part 100, Appendix A was under development. As discussed in NRC's Supplemental Safety Evaluation Report ("SSER") 4, issued on May 11, 1976, in connection with the DCPP operating license application, the original seismic design for DCPP, accepted by the NRC for the construction permit, was based upon consideration of four earthquake scenarios:

A. Magnitude 8-1/2 along the San Andreas fault 48 miles from the site.

B. Magnitude 7-1/4 along the Nacimiento fault 20 miles from the site.

C. Magnitude 7-1/2 along the off-shore extension of the Santa Ynez fault 50 miles from the site.

D. Magnitude 6-3/4 aftershock near the site associated with Earthquake (A).

Based on a review of predicted ground motions at the site, PG&E developed the Design Earthquake ("DE") response spectra. The Double Design Earthquake ("DDE") was defined as twice the DE.

8. In 1973, when PG&E submitted the DCPP operating license application, it identified research related to the Hosgri fault offshore from DCPP. That fault is now placed approximately three miles from the site. As discussed in SSER 4 (at 2-4, 3-1), the criteria to be used in the Hosgri evaluation were developed jointly by the NRC, PG&E, and outside consultants. The Hosgri evaluation used accepted deterministic methodology.

9. DCPP's operating license, issued in 1984, was ultimately based on three separate seismic evaluations: the original DE and the DDE, and the Hosgri Earthquake ("HE") response

[1] "Petition to Intervene and Request for Hearing by Friends of the Earth," dated August 26, 2014.

spectra. These evaluations are described in the NRC Staff's SSER 7, issued May 26, 1978 (at 2-3 – 2-5).

10. The DE had a horizontal peak ground acceleration (or ground motion) of 0.20g, and the DDE had a horizontal peak ground acceleration of 0.40g. As addressed in SSER 4, the NRC Staff concluded based on its consultations with outside experts that for the HE, a magnitude 7.5 earthquake should be assumed on the Hosgri fault with an effective horizontal peak ground acceleration of 0.75g.

11. The 10 C.F.R. Part 100 Appendix A concepts of "operating basis earthquake" ("OBE") and "safe shutdown earthquake" ("SSE") did not exist when the DE and DDE were developed. In SSER 1, issued on January 30, 1975, the NRC first stated that the DE (0.20g) was equivalent to an OBE and the DDE (0.40g) was equivalent to an SSE. SSER 1, Section 2.5.2. However, after the Hosgri fault was identified, the NRC stated that the HE was considered to be the SSE, or at least the equivalent. SSER 7, Section 2.5.

12. The three DCPP licensing basis earthquakes can be summarized as follows:

Licensing Basis Earthquake	Peak Ground Acceleration
DE	0.20g
DDE	0.40g
HE	0.75g

The licensing basis ground motions for each of the DE, DDE, and HE are reflected in a deterministic licensing basis ground motion response spectrum used for the design and seismic qualification of safety related equipment. The peak acceleration corresponds to an acceleration

at a period of 0.01 seconds on a response spectrum (or roughly 100 hertz if plotted against the frequency).

13. PG&E did not update the DCPP Updated Final Safety Evaluation Report ("UFSAR") to reflect that the NRC considered the HE to be the SSE. The UFSAR reflects PG&E's view at the time that the DDE was considered to be the SSE. The NRC Staff noted this discrepancy in SSER 7, Section 2.5.2, but nonetheless equated the HE to the SSE. The HE was described in the UFSAR and was clearly part of the licensing basis.

14. The 1977 Hosgri evaluation of seismic qualification of equipment was not based on the same methods, assumptions, or acceptance criteria as the DE and DDE evaluations. SSER 7, Section 3.7, at 3-13 – 3-14. For example, damping values associated with specific structures or components being evaluated were updated from those used for the DE and DDE analyses, based on those recommended by the NRC in Regulatory Guide 1.61 (October 1973). Because of the limited data available at the time of the DE and DDE seismic design of DCPP, the original damping values were not realistic and were overly conservative. The NRC Staff stated: "Allowing the use of higher damping values in this reevaluation is realistic and should not be regarded as an arbitrary lowering of the margins of safety." SSER 7, Section 3.8.5.3 at 3-19. Similarly, actual as-built material strengths could be used rather than assumed material strengths as in the original evaluations. The NRC Staff concluded in SSER 7 that if PG&E "used a load in the original design and can now demonstrate that the Hosgri event load is less, we consider this to be a sufficient load determination. Where the original analysis is more limiting, [PG&E] has chosen not to take credit for the lesser Hosgri event loads, but rather to use the more limiting [DDE] loads." *Id.* PG&E continues to qualify safety related equipment for the DE, DDE, and HE seismic loads.

15. The NRC Atomic and Safety Licensing Board ("ASLB") and the Atomic Safety and Licensing Appeal Board ("Appeal Board") considered DCPP's seismic design basis during hearings on the operating license. The DE was upheld as an OBE, and the HE was found to be the equivalent of an SSE.

16. The DCPP Unit 1 Facility Operating License was amended after initial licensing to address a recommendation of the NRC's Advisory Committee on Reactor Safeguards ("ACRS") to add License Condition 2.C.(7). This condition required PG&E to "develop and implement a program to reevaluate the seismic design basis used for [DCPP]." In particular, Condition 2.C.(7) required PG&E to "identify, examine, and evaluate all relevant geologic and seismic data, information, and interpretations that have become available since the 1979 ASLB hearing…." The report was to be issued to the NRC three years after NRC Staff approval of a program plan.

17. To satisfy Condition 2.C.(7), PG&E developed the Long Term Seismic Program ("LTSP") for Diablo Canyon. On July 31, 1988, PG&E submitted an LTSP Final Report to the NRC, which included detailed evaluations of existing and new geologic and seismic data. The criteria used in the LTSP evaluation were developed jointly by PG&E and outside consultants, and are a combination of deterministic seismic margin assessment and the seismic probabilistic risk assessment/seismic hazard analysis (the Diablo Canyon PSHA). The LTSP Final Report demonstrated that a maximum earthquake of magnitude 7.2 on the Hosgri fault constituted a very conservative basis for analyzing the plant and its equipment, and concluded that equipment qualified for the DE, DDE, and HE seismic loads remained qualified.

18. The LTSP and associated NRC review took place from April 1984 – September 1991. The process involved over sixty noticed public meetings, which included the NRC, NRC

consultants, the ACRS, the U.S. Geological Survey, University of Nevada professors and graduate students, a Ground Motion Panel consisting of four distinguished professors, a Soil Structure Interaction Panel consisting of four distinguished professors, a Fragility Panel consisting of distinguished engineers from the Brookhaven and Sandia National Laboratories and engineers from EQE, Inc., and a PRA Advisory Panel consisting of distinguished engineers from Brookhaven Laboratory. In addition, independent studies for the NRC were conducted by Dr. David B. Slemmons, University of Nevada, on geology, seismology, and tectonics; Dr. Kenneth Campbell of EQE on empirical ground motions; Dr. Anestis S. Veletsos on soil/structure interaction; Dr. Michael Bohn, Sandia National Lab, on seismic risk; Dr. James Johnson, EQE, Inc., and Dr. M. K. Ravinda, EQE, Inc., on fragility; and the Brookhaven National Laboratory on probabilistic risk assessment. All of these activities were reviewed at a series of public meetings of the Advisory Committee on Reactor Safeguards.

19. On June 30, 1991, the NRC Staff issued SSER 34, which described the Staff's review of the LTSP. The NRC stated that, "[t]he seismic qualification for Diablo Canyon will continue to be the original design basis plus the Hosgri evaluation basis, along with the associated analytical methods, initial conditions, etc. The LTSP has served as a useful check on the adequacy of the seismic margins and has generally confirmed that the margins are acceptable." SSER 34, Section 1.4. The NRC found that PG&E had satisfied Condition 2.C.(7).

20. The LTSP therefore had no effect on the DE, DDE, or HE evaluations – that is, no change in the licensing basis earthquakes for DCPP used in the seismic design of safety related equipment.

21. After PG&E completed one confirmatory item resulting from SSER 34 (evaluating the impact of the differences between the NRC's estimate of the 50th and 84th

percentile horizontal and vertical ground motion and PG&E's estimates), the NRC closed Condition 2.C.(7).[2]

22. In closing out Condition 2.C.(7), PG&E committed to maintaining "a strong geosciences and engineering staff to keep abreast of new geological, seismic, and seismic engineering information and evaluate it with respect to its significance to [DCPP]." SSER 34, Section 2.5.2.4. PG&E in fact has continued to implement this program throughout the operating life of the plant. As a result of its ongoing collaboration with independent scientists and the U.S. Geological Survey, PG&E identified and reported to the NRC new information related to the Shoreline zone of seismicity (referred to as the "Shoreline Fault") in November 2008.

23. On November 14, 2008, the Shoreline Fault was entered into DCPP's Corrective Action Program for an initial deterministic engineering assessment of plant safety; that is, to address whether the existing seismic design of safety related equipment is adequate for new or updated ground motion response spectra developed for the Shoreline Fault. Because new seismic information had been identified as a result of the ongoing LTSP research and evaluation process for Diablo Canyon, this initial assessment was based on a comparison of the ground motion levels hypothesized for the Shoreline Fault to the Hosgri ground motion levels considered in the 1991 LTSP. The assessment found that the ground motions for the Shoreline Fault would be bounded by the ground motions from the larger Hosgri fault for which the plant design was previously found to be acceptable. Plant structures, systems, and components qualified by the licensing basis seismic evaluations would be qualified for the maximum ground motions predicted for the Shoreline Fault based on the most up-to-date geoscience methods.

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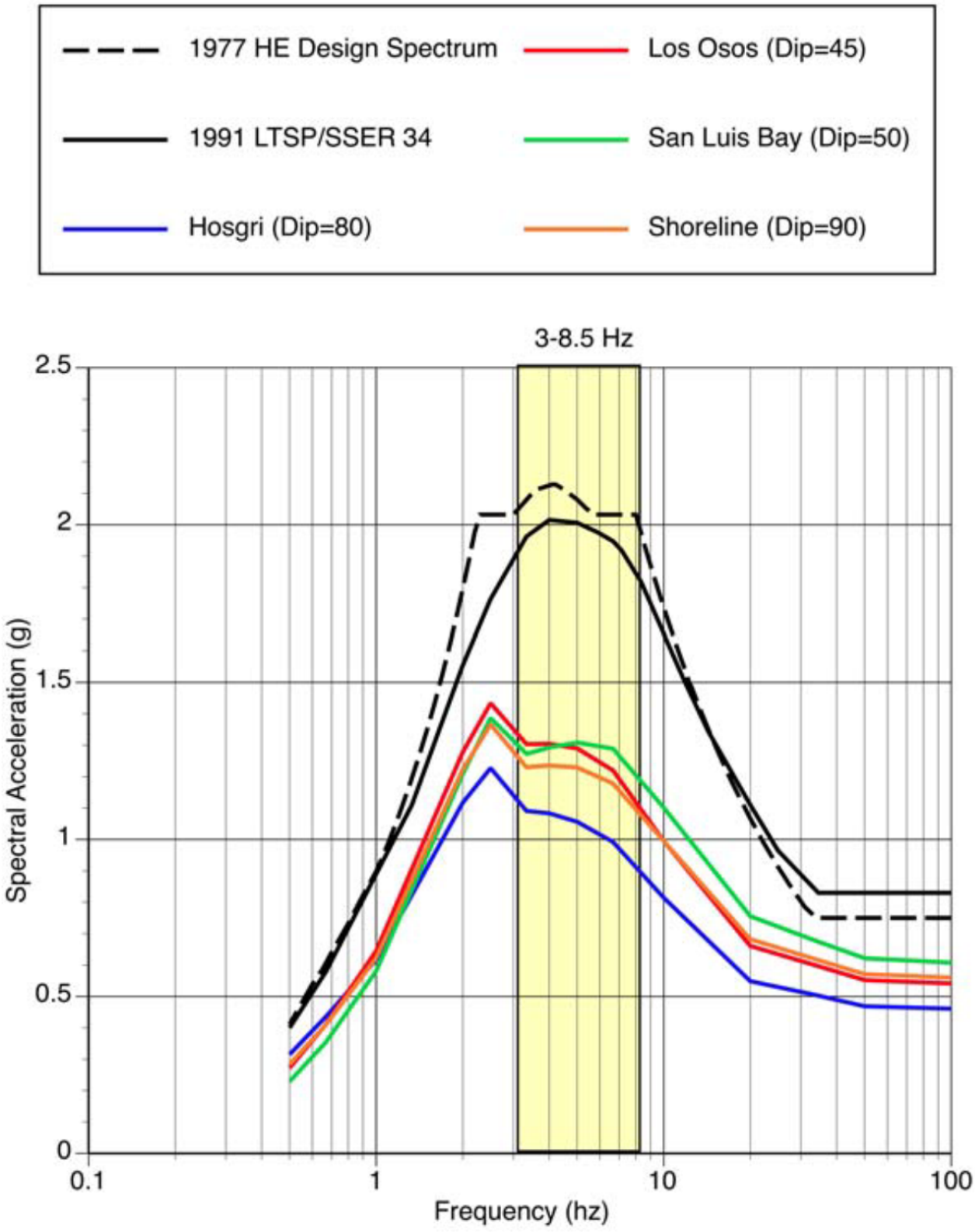
[2] Letter from H. Rood, NRC, to G. M. Rueger, PG&E, "Transmittal of Safety Evaluation Closing Out Diablo Canyon Long-Term Seismic Program (TAC Nos. M80670 and M80671)" (April 17, 1992).

24. In early 2009, the NRC Staff completed its first independent assessment of PG&E's new seismic information, documented in a letter to PG&E on April 8, 2009, attaching Research Information Letter ("RIL") 09-001.[3] The NRC Staff's assessment was a best-estimate deterministic hazard analysis. The Staff's analysis confirmed that seismic loading levels predicted for a maximum magnitude earthquake on the Shoreline Fault are below those for which Diablo Canyon was previously analyzed for all frequencies of interest.

25. On January 7, 2011, PG&E submitted to the NRC a detailed report on the Shoreline Fault. Based on a deterministic methodology, PG&E created new or updated ground motion response spectra for the Shoreline, Los Osos, Hosgri, and San Luis Bay faults. The Shoreline Fault Report demonstrated that the response spectra for the four regional faults are bounded by the licensing basis 1977 HE response spectrum. Figure ES-1 from the Shoreline Fault Report (appearing below) depicts the relevant ground motion response spectra. As is typical in deterministic seismic evaluations of this type, PG&E utilized deterministic 84th percentile ground motions. This corresponds to the median plus one standard deviation as was applied in the development of the 1977 HE response spectrum.

[3] Research Information Letter 09-001, "Preliminary Deterministic Analysis of Seismic Hazard at Diablo Canyon NPP from Newly Identified 'Shoreline Fault'" (April 8, 2009) (ADAMS Accession No. ML090330523).


1977 HE Design Spectrum
1991 LTSP/SSER 34
Hosgri (Dip=80)
Los Osos (Dip=45)
San Luis Bay (Dip=50)
Shoreline (Dip=90)
3-8.5 Hz
Spectral Acceleration (g)
Frequency (hz)
0
0.5
1
1.5
2
2.5
0.1
1
10
100

26. Note that Figure ES-1 includes the 1977 HE design (licensing basis) response spectrum as well as the 1991 LTSP (SSER 34) response spectrum. It also includes a "Hosgri (Dip=80)" spectrum. The latter is a deterministic ground motion developed by PG&E in 2011 as part of the studies leading to the Shoreline Fault Report. It is based on a magnitude 7.1 event on the Hosgri fault using ground motion prediction methods that were available in 2011. The differences between the 1977, 1991, and 2011 Hosgri response spectra are due to the evolution in the intervening years in the understanding of the characteristics of the Hosgri fault and updates to the ground motion prediction methods. The 2011 Hosgri (Dip=80) response spectrum has no direct relationship to the 1977 HE licensing basis spectrum, other than to show that the latter is conservative. The fact that in 2011, the Shoreline Fault, Los Osos fault, or San Luis Bay fault spectra may exceed the 2011 Hosgri spectrum does not mean that the predicted ground motions for those three faults will exceed the 1977 HE licensing basis or the design capabilities of safety related plant equipment.

27. In June 2011, based on interactions with the NRC, PG&E also documented a formal Prompt Operability Assessment in accordance with Diablo Canyon procedures, addressing the seismic safety implications of the Shoreline Fault. The assessment again addressed the Shoreline Fault, as well as new information regarding the other regional faults. PG&E compared new or updated ground motion response spectra to the three licensing basis earthquake (DE, DDE, and HE) response spectra. The assessment found that although the ground motions for the Shoreline Fault exceed the DDE in some frequencies, they do not at any frequency exceed the licensing basis 1977 HE ground motions.. Because the Shoreline Fault (and other regional faults) ground motions are enveloped by the 1977 HE, and because DCPP can safely shutdown during events associated with the 1977 HE, DCPP can also safely shutdown

down during events associated with the Shoreline Fault and San Luis Bay and Los Osos faults. The fact that equipment is qualified in some cases to even greater loads generated from the conservative, and hypothetical, DDE evaluation adds design margin in those cases. Because the maximum predicted loads did not exceed the licensing basis seismic loads, plant equipment was not in an unanalyzed condition.

28. Dr. Michael Peck, the NRC Senior Resident Inspector at Diablo Canyon at the time, urged PG&E to address new seismic information through the process in PG&E's procedures adopted in accordance with NRC Inspection Manual Chapter Part 9900: Technical Guidance – "Operability Determinations and Functionality Assessments for Resolution of Degraded and Nonconforming Conditions Adverse to Quality or Safety" (April 2008). That process applies to equipment identified as degraded or nonconforming relative to the licensing basis. PG&E maintained that the operability process for degraded or nonconforming equipment is not the proper regulatory process for evaluating new seismic information; that no regulatory process was defined at the time; and that the LTSP was the best process for evaluating new seismic information. The NRC has since clarified that the process for addressing new seismic information post-Fukushima will be the Section 50.54(f) request for information process.

29. Dr. Peck also advocated use of the original DDE methodology and response spectra as the appropriate method and benchmark for evaluating new seismic information. Assumptions vary among the analyses completed for the DE, DDE, and HE evaluations. However, each licensing basis evaluation, such as the DE, DDE, and HE, is a self-contained analysis completed at the time of licensing. The licensing basis evaluations each have their own "one moment in time" set of methodologies and input values. It is not technically valid to take the most conservative assumptions from among the three licensing basis evaluations and apply

those to seismic hazards information unknown at the time of licensing, to address the present operability of safety related equipment or to demonstrate the safety of current operation. The NRC Staff management, in addressing his Differing Professional Opinion, ultimately rejected Dr. Peck's view and recognized that the HE response spectrum was accepted as a part of the Diablo Canyon licensing basis.[4]

30. The NRC's Part 9900 Operability Guidance also specifically allows use of an alternate methodology to establish operability or functionality of safety related equipment (Part 9900 Operability Guidance, Appendix C at Section C.4).

31. On October 20, 2011, because of the uncertainty that existed at the time at DCPP surrounding the regulatory process for evaluating the new seismic information, PG&E submitted License Amendment Request ("LAR") 11-05 to the NRC, requesting: (1) to clearly define the process for evaluating newly-identified seismic information based on the LTSP, and (2) to clarify – consistent with SSER 7 – that the HE is the DCPP equivalent to an SSE. Request 1 corresponded to PG&E's ongoing commitment to keep abreast of new geological, seismic, and seismic engineering information. Request 2 sought to establish consistency between the FSAR and the NRC's documented position on the SSE, as established in earlier regulatory correspondence. However, LAR-11-05 was later mooted by the post-Fukushima Section 50.54(f) letter. PG&E therefore withdrew LAR-11-05.

32. Within approximately one year of the Fukushima event, the Commission directed specific actions to address the agency's Japan Lessons Learned Near-Term Task Force Recommendations. To implement Recommendation 2.1, the NRC sent a letter on March 12,

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[4] Memorandum, M.A. Satorius to M.S. Peck, "Differing Professional Opinion Appeal Decision Involving Seismic Issues at Diablo Canyon (DPO-2013-002)" (September 9, 2014).

2012, to all power reactor licensees pursuant to 10 C.F.R. § 50.54(f) requesting the reevaluation of seismic hazards reevaluate seismic hazards using present day methods and guidance to identify vulnerabilities. The Section 50.54(f) letter effectively subsumed the Generic Issue 199[5] process previously underway for plants in the Central and Eastern U.S. and applied a similar process to plants in the Western U.S. As a Western plant, PG&E must submit its initial seismic hazards analysis within three years of the Section 50.54(f) request (*i.e.*, by March 2015). On April 29, 2013, PG&E submitted to the NRC a plan and schedule for its Diablo Canyon seismic reevaluation.

33. The NRC Staff reviewed the Shoreline Fault Report and in September 2012 documented its findings in Research Information Letter ("RIL") 12-01.[6] In RIL 12-01 and an October 12, 2012 letter to PG&E, the NRC confirmed its previous conclusion in RIL 09-001 that the seismic loading levels for a maximum magnitude earthquake on the Shoreline Fault are below those for which DCPP was previously analyzed. The NRC reiterated (at page 2) that "the deterministic seismic-loading levels predicted for the Shoreline fault earthquake scenarios developed and analyzed by the NRC are at, or below, those levels for the HE ground motion and the LTSP ground motions. . . . Therefore, the existing design basis for the plant already is sufficient to withstand those ground motions." In this letter, the NRC also concluded (at page 2) that in light of the deterministic evaluations that had been completed, the Shoreline Fault

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5 Memorandum, M.E. Mayfield to F. Eltawila, "Generic Safety Issue 199, 'Implications of Updated Probabilistic Seismic Hazards Estimates in Central and Eastern United States on Existing Plants'" (June 9, 2005) (ADAMS Accession No. ML051600272).

6 Research Information Letter 12-01, "Confirmatory Analysis of Seismic Hazard at the Diablo Canyon Power Plant from the Shoreline Fault Zone" (September 2012) (ADAMS Accession No. ML121230035) ("RIL 12-01").

scenario "should be considered as a lesser included case under the Hosgri evaluation and the licensee should update the Final Safety Analysis Report (FSAR), as necessary."

34. The NRC's October 12, 2012 letter regarding PG&E's 2011 Shoreline Fault Report also stated that the NRC's ongoing review of seismic issues at DCPP would be conducted under the Fukushima-related Section 50.54(f) process.

35. PG&E complied with the NRC Staff's expectations stated in the October 12, 2012 letter. PG&E updated the Diablo Canyon Updated Final Safety Analysis Report ("UFSAR") under the process established in 10 C.F.R. § 50.71(e) to clarify that the Shoreline scenario is a lesser included case under the Hosgri evaluation. No license amendment was required for this UFSAR change. This issue as well was addressed in the DPO process, with the DPO panel concluding that the NRC Staff did not fail to enforce 10 C.F.R. § 50.59 requirements.

36. On September 10, 2014, PG&E issued a report documenting the results of the Central Coastal California Seismic Imaging Project ("CCCSIP"), which was based on advanced seismic studies recommended by the California Energy Commission in response to state legislation (California Assembly Bill 1632). These studies have given PG&E and independent scientists unprecedented insight into the seismic characteristics of the region near Diablo Canyon. These studies have shown that, using the most up-to-date deterministic methodologies and information, the updated GMRS for the Shoreline Fault (and for other regional faults) remains bounded by the licensing basis 1977 HE ground motions. This report confirmed previous analyses that DCPP and its structures, systems, and components are designed to withstand and perform their safety functions during and after a seismic event on faults in the vicinity of the plant.

37. PG&E will use the information developed from its advanced seismic studies and the 2014 CCCSIP Report to support the probabilistic seismic hazard assessment requested by the NRC under 10 C.F.R. § 50.54(f) in order to respond to the agency's Japan Lessons-Learned Near-Term Task Force recommendations that licensees reevaluate the seismic hazards at their sites against present-day NRC requirements and guidance.

38. Specifically, PG&E is currently working on an updated PSHA for Diablo Canyon to address the NRC's Section 50.54(f) request for information. The PSHA was originally completed for the LTSP, was updated in 1994 to support PG&E's response to the NRC's Generic Letter and Section 50.54(f) request for information on plant-specific severe accident vulnerabilities due to external events,[7] and has been updated from time-to-time since then. As requested in the NRC's October 12, 2012 letter, PG&E's response to the Section 50.54(f) request will compare updated Ground Motion Response Spectra to the current licensing basis. PG&E's response is due to the NRC on March 12, 2015.

39. U.S. Geological Survey geophysicist Dr. Jeanne Hardebeck has conducted research and suggested that the possibility of a joint rupture on the Shoreline and Hosgri faults cannot be ruled out, and therefore could be more capable than previously evaluated. This information is addressed in PG&E's 2014 CCCSIP Report related to PG&E's advanced seismic studies. It will also be addressed in connection with the probabilistic seismic reevaluation to respond to the Section 50.54(f) request for information.

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[7] *See* Generic Letter 88-20, Supplement 4, "Individual Plant Examinations of External Events (IPEEE) for Severe Accident Vulnerabilities" (June 28, 1991).

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed in accord with 10 C.F.R. § 2.304(d)
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