



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

August 27, 2015

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

**SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 - REQUEST FOR  
ADDITIONAL INFORMATION ASSOCIATED WITH NEAR-TERM TASK  
FORCE RECOMMENDATION 2.1, SEISMIC REEVALUATIONS (TAC NOS.  
MF5275 AND MF5276)**

Dear Mr. Halpin:

By letter dated March 11, 2015<sup>1</sup>, to the U. S. Nuclear Regulatory Commission (NRC), Pacific Gas and Electric Company (the licensee), submitted for NRC review its Seismic Hazard and Screening Report, Pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f), Response for Information Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident for the Diablo Canyon Power Plant, Unit Nos. 1 and 2 (Diablo Canyon).

The NRC staff has reviewed the information provided for Diablo Canyon and has determined that additional information is required to complete its review. Enclosed is a request for additional information (RAI) related to the ground motion prediction equation model used in the probabilistic hazard analysis for Diablo Canyon. As discussed with your staff on August 17, 2015, it was agreed that a response to the RAI would be provided no later than September 16, 2015.

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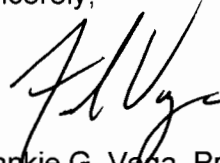
<sup>1</sup> The letter can be found under Agencywide Documents Access and Management System (ADAMS) No. ML15071A046.

E. Halpin

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If you have any questions related to the enclosed RAIs or the requested submission date, please contact me at 301-415-1617 or via e-mail at [Frankie.Vega@nrc.gov](mailto:Frankie.Vega@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'F. Vega', with a stylized flourish at the end.

Frankie G. Vega, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:  
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION  
NEAR-TERM TASK FORCE RECOMMENDATION 2.1  
SEISMIC HAZARD AND SCREENING REPORT  
FOR DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2

By letter dated March 11, 2015<sup>2</sup>, to the U. S. Nuclear Regulatory Commission (NRC), Pacific Gas and Electric Company (the licensee), submitted for NRC review its Seismic Hazard and Screening Report, Pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f), Response for Information Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident for the Diablo Canyon Power Plant, Unit Nos. 1 and 2 (Diablo Canyon).

Request for Additional Information - Review of the ground motion prediction equation model used in the probabilistic hazard analysis

As part of the seismic reevaluation for the Diablo Canyon site, the Zhao et al. ground motion prediction equation (GMPE) model (ZL11) was developed by the Senior Seismic Hazard Advisory Committee (SSHAC) Technical Integration (TI) Team for use in the probabilistic seismic hazard analysis (PSHA).

Consistent with the 50.54(f) letter and the Screening, Prioritization and Implementation Details (SPID)<sup>3</sup> guidance, please provide the following information:

1. Although the Zhao (2006) GMPE model and Zhao and Lu (2011) magnitude scaling concept are published separately in peer-reviewed journals, the TI team's implementation of the Zhao (2006) GMPE model incorporating Zhao and Lu (2011) has not been so published. Please provide additional explanation regarding how inclusion of this newly modified Zhao (2006) model meets the criteria used in Section 5.5.2 of the Southwestern United States Ground Motion Characterization Report for the selection of candidate GMPE models.
2. Although Zhao and Lu (2011) addresses magnitude-scaling relationships relative to NGA-West1, the ground-motion characterization for the Diablo Canyon PSHA uses NGA-West2 relationships. Please clarify how the magnitude-scaling concepts in Zhao and Lu (2011), which are based on NGA-West1, are applicable to the magnitude-scaling relationships used in the Diablo Canyon PSHA, which are based on NGA-West2.
3. Discuss how California strong motion data, if available, exhibits the magnitude-scaling relationship developed in Zhao and Lu (2011), and provide additional rationale for why

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<sup>2</sup> The letter can be found under ADAMS No. ML15071A046.

<sup>3</sup> The SPID guidance document is found in ADAMS under Accession No. ML12333A170.

Enclosure

application of the Zhao and Lu (2011) magnitude-scaling relationship is appropriate for the Diablo Canyon tectonic setting.

4. To more clearly demonstrate the impact of the TI Team implementation of Zhao and Lu (2011), referred to as ZL11, provide Sammon's maps that indicate the position of ZL11 relative to the other seed models for  $T=0.01, 0.10, 0.20, 0.5, 1,$  and  $2$  seconds. In addition, provide the Excel files of the hazard curves shown in Appendix O of the Southwestern United States (SWUS) ground motion characterization report (Figures O.2-1a, 2a, 3a, 4a, and 5a).

E. Halpin

- 2 -

If you have any questions related to the enclosed RAIs or the requested submission date, please contact me at 301-415-1617 or via e-mail at Frankie.Vega@nrc.gov.

Sincerely,

*/RA/*

Frankie G. Vega, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:  
Request for Additional Information

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